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National Petroleum News

News From Oil Industry Everywhere

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U. S. Backing Up States' Charges Of Tax Evasion

By ALLEN S. JAMES

(Telegraph Bulletin)

SHREVEPORT, La., June 29.—The federal grand jury, in session an hour late June 28, started its investigation of charges filed against 53 persons in five southeastern states in connection with alleged misbilling of gasoline in connection with a conspiracy to defraud the states of the gasoline tax. It is estimated that several days will be required for the grand jury to hear all the evidence.

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SHREVEPORT, La., June 26.—Some of the participants who, for one reason or another, escaped punishment in state courts for their part in the huge gasoline tax evasion racket exposed in several southeastern states a year or more ago, are going to have a much harder time wriggling from under the federal charges that have now been filed against them.

That is the impression one obtains here. Scores of witnesses have been here most of the week, waiting for the federal grand jury to dispose of routine matters and begin examining the evidence on which is based the charges filed against 53 persons in five states of violation of federal statutes by misbilling gasoline moved in interstate commerce, with intent to defraud the states of the gasoline tax.

The federal grand jury, it was indicated, would hear witnesses retell their stories which were given wide publicity a year ago as to methods used in operating the racket.

Briefly, that part of the racket about which the U. S. government has interested itself, was worked through certain refinery agents and brokers in the Shreveport area shipping to the distributing companies who were parties to the conspiracy, tank cars of gasoline which had been misbilled as kerosine, re-

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Tax Condemned

CLEVELAND, June 29.—Resolutions condemning the undistributed profits tax because of the hardships it is working on independent marketing companies have so far been adopted by the following associations:

Virginia Oil Men's Ass'n., Richmond, Va.

South Carolina Oil Jobbers Ass'n., Anderson, S. C.

Indiana Independent Petroleum Ass'n., Indianapolis.

Oil Men's Ass'n. of New England, Inc., Boston.

United Oil Terminals Ass'n., Mt. Vernon, N. Y.

Va. Jobbers Urge Quick Repeal Of U. S. Profits Tax

By Telegraph

ROANOKE, Va., June 28.—Immediate repeal of the undistributed profits tax in the 1936 revenue law was demanded in a resolution unanimously adopted at the annual convention of the Virginia Petroleum Jobbers Assn. here last week.

The law was criticized as placing an undue burden on the small businessman by penalizing the use of corporate earnings for payment of debts, expansion or modernization of plant facilities and building up reserves for periods of slack business. Copies of the resolution will be sent to Virginia members of Congress.

Ira F. Walton, Roanoke Oil Co., Roanoke, was elected president of the Virginia jobbers association, with R. B. Spratley, Delta Oil Co., Petersburg, vice president. A. L. Tenser, Richmond, continues as secretary. Five directors were named, McCaleb Higgins, Higgins Oil Co., Calax; M. B. Whiting, Whiting Oil Co., Clifton Forge; T. C. Watkins, Jr., U. S. Oil Co., South Boston; W. E. Woody, Central Garage, Rocky Mountain; and A. G. Peery, Tazewell.

Mr. Whiting, who is president of the National Oil Mar-

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Retailers Sponsor Price Posting Law In Illinois

N. P. N. News Bureau

CHICAGO, June 29. — With dealers and lesseees in control of retail gasoline prices, a wave of price posting legislation has emanated from retail associations as the current legislative season draws to a close.

Two states—Iowa and Pennsylvania—have such laws going into effect July 1. A similar measure is expected to complete its course through the Illinois legislature, possibly tonight. such a bill introduced at its next session, and the industry may look for similar bills in other states.

Retailers Sponsors

Most legislatures have completed regular sessions, so, before special or other regular legislatures will have convened, two states, and possibly three, will yield experience to the industry on state regulation of posting gasoline prices. The Iowa statute includes fuel oil prices also.

Pennsylvania's law and the Illinois bill were sponsored by retailers' associations. Iowa's law, an amendment to the gasoline tax law, was an oil co-operative measure. State and local retailer associations had the measures introduced and this legislative activity conforms to a recommendation of the National Assn. of Petroleum Retailers.

The national retailers' association's direct legislative work is confined to Congress but it makes recommendations to state or local association on state legislation. The national association board, at its April meeting in St. Louis, accepted the legislative committeee's recommendation for advocating state price posting laws.

Penalties in state laws on this subject so far adopted depart from the national association's opinion of enforcement. E. Chat Shanks, executive secretary, explained that the national association favors injunction proceedings to provide quick relief on violations rather than the slower criminal proceedings. State laws thus far make viola-

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Dealers Seek to Guard Margins Under New Price Posting Law

PITTSBURGH, June 29.—Looked upon by some as a cure-all for many of the marketing aches and pains in Pennsylvania, the state's new price posting law which is scheduled to become effective July 1 is viewed by other observers of retail conditions as a possible boomerang.

According to Lawrence F. Casey, counsellor for the state's department of revenue, which will have charge of enforcing the law, a "reasonable extension of time" will be allowed for the obtaining of licenses. Asked what he meant by "reasonable," Casey said "probably about a week."

Under the provisions of the law, each pump or outlet for liquid fuel in the state must have a permit, which is valid for one year and must be renewed each year. The cost of the permit per pump or outlet is $1.

The law also provides that "every person engaged in the business of selling liquid fuels to the consumer shall at all times have posted at his place of business in a conspicuous place at or near the pumps or containers from which such products are dispensed a sign showing the price for which said liquid fuel is sold."

It is unlawful, under the terms of the act, to sell at any other than the posted price, or to "give or offer to give any

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Retailers Back Posting Law

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tion a criminal offense, punishable by fine or imprisonment.

Elimination of market disrupting practices of under-the-canopy price cutting and "chiseling" are aims of the retailers in seeking price posting legislation.

Aimed at "Chiseling"

"If a fellow posts his price at which he sells that is all right with us", Shanks commented in explaining the association's aim is to get the actual selling price in the open, regardless of what that actual price is. "Where markets are disrupted is where a fellow posts one price and sells at another," he said.

Inability of retailers to adhere to posted prices through their own efforts led to seeking the same result through state legislation requiring posting of prices and concessions and selling at posted terms.

Enforcement of the law, in the opinion of retailers, will come through taking several strong cases to court and letting convictions stand as a lesson to would-be violators.

The retailers so far have not had any open opposition from other elements of the oil industry in seeking price posting legislation. Some factions have privately questioned government regulation of posting but have not cared to make known such opposition, while in Iowa the industry supported the oil co-operative posting program.

Last Minute Measure

Uncertainty as to the disposition of the price posting bill in Illlinois is caused by the rapid approach of the end of the current session of the legislature June 30. At this writing the bill has passed the house and is before the senate. The bill did not go through the routine of committee assignment in the senate, passed a second reading last night and is expected to come up for third reading today.

The bill has been sponsored by retailers down state and in Cook (Chicago) County. Some 700 retailers appeared in Springfield in support of the bill when in the house.

So far no other segment of marketing has appeared openly against the measure. Oil company sentiment is reported to be on both sides, some favoring the measure and others opposed.

Reprints of a NATIONAL PETROLEUM NEWS editorial from its June 16 issue, are reported to have been circulated anonymously among legislators, bringing to their attention possible difficulties of enforcing a price posting law. The retailers have been annoyed by circulation of the editorial as damaging to passage of the bill.

Chicago "Bargains"

Sponsoring such a law acknowledges disturbed retail markets, or what the industry commonly calls under-canopy discounting, yet gasoline "bargains" are openly flaunted to motorists in Chicago.

With regular grade gasoline posted at a top price of 19-cents, some stations offer "8 gallons for the price of 7." This is not unbranded gasolines, but national and regional brands of major refiners. Third grade gasoline price signs announce "4 gallons for 55-cents" and "7 gallons for $1."

Signs advertising "2-cents off" or premiums such as five bars of soap with 7-gallons of gasoline are seen frequently.

One chain of retailer stations, handling a national brand, last week-end offered a bargain of four quarts of "good" oil, delivered at the option of the buyer, with the purchase of 7-gallons of regular at the full posted 19-cent price. The buyer had the choice of two cents off the full price, or the four quarts of oil, and, by electing to take the oil, received a card calling for delivery at some future date.

First attempt of retailers to regulate prices during the current session of the legislature in Illinois resulted in the introduction of a bill that would make a public utility of oil through the state finance department regulating and controlling marketing.

Effects of the bill were pointed out by marketers to the retailers. The bill was withdrawn and about two weeks later the same representative introduced the present bill to have the state police posted prices.

Gets 116 Tax Evaders

WICHITA, Kan., June 28.—In the months of April and May 116 convictions have been obtained in Kansas for violation of the motor vehicle fuel tax exemption law.

In April 78 convictions were obtained while in May there were 38 convictions. Fines ranged from $25 to $75 and costs, plus the amount of the tax evaded.

TULSA, June 28.—J. C. Finley, formerly assistant chief geologist for Phillips Petroleum Co., Bartlesville, Okla., on July 1 will become chief geologist for The Middle States Petroleum Co. and Turman Oil Co. and their subsidiaries. He succeeds J. D. Watson, resigned.

Dealers Seek Margin Aid

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liquid fuels or merchandise or anything of value or any service for which payment is ordinarily required to any purchaser or prospective purchaser of any liquid fuels."

Unlawful Practices Defined

Other unlawful practices under the terms of the act include selling or delivering of any branded liquid fuel under the name of another brand, or delivering into any tank or container any liquid fuels other than those indicated by the identifying mark on the container or the pump used in connection with it. Maximum punishment for violation of the act is a $5000 fine, or one year's imprisonment, or both.

As the time approaches for the law to go into effect, oil companies and dealers showed little anxiety, probably because, up until June 28, few had received copies of the law or permit applications from Harrisburg. The revenue department told NATIONAL PETROLEUM NEWS that 25,000 copies of the law, permit applications, and regulations with respect to the law, had gone out to dealers and oil companies on June 27, and that a remaining 5000 were to be mailed June 28. On this latter date no material from Harrisburg was to be found in the Pittsburgh area, not even in the local office of the state police.

Dealers Back of Law

Pittsburgh dealers, now enjoying a five-cent margin with 20-cent gasoline after a recent price flurry, were feeling good, with qualifications and crossed fingers. The dealer group in this city has been active in the instigation of the law, and now they have state enforcement behind their efforts to eliminate discounts, rebates, premiums, and to subdue the dealer's nightmare, the commercial consumer account.

Following a directors' meeting of the Associated Gasoline Retail Dealers of Alleghany County June 28, Chairman John H. Donahue told NATIONAL PETROLEUM NEWS his group had decided that, in the event any outlets attempted to break down the price under the new law, his members would drop their price to 17 cents.

One Pittsburgh oil marketing executive predicted the new price posting law would bring another price flurry among the dealers and that, inside of six months, the dealer margin would be down to 3.5 cents. Pittsburgh dealers, he said, are now giving away from two to three cents of their five-cent margin.

What About Trucks

This executive stated that the truck business would be the stumbling block in the effort to maintain a normal price level. With the necessity, under the new law, for dealers to post the price at which they sell gasoline, and the accompanying violation of the law to sell below that price, many dealers with a good truck business are expected to post their truck prices and sell to all customers at that price, rather than lose the truck business.

A weakness in the law, and one which has been pointed out as a possible loop hole through which "discount-minded" operators may attempt to crawl, is said to be in the fact that the section of the law on posting of prices does not specify the "per gallon" price. This, in the opinion of one marketer, leaves an opening for a station operator to post a five-gallon price, and even a sliding scale of prices for larger purchases.

This marketer is of the opinion that the state, under this new law, will be unable to police the stations sufficiently well to make certain that the brand of fuel that is identified on the pump is the same as the brand in the container or supply tank, and that this will eventually lead to the making of sample tests at stations. This, he states, is only a step away from selling gasoline by specification under state supervision.

All Sales to Consumers

Some question has arisen from Pennsylvania marketers as to the extent to which the price posting law will affect the wholesale operations of the industry. According to the department of revenue's counsel, Lawrence F. Casey, the law includes tank car and tank truck sales to consumers and in these cases requires the posting of the prices at the loading racks or some other conspicuous place.

It is understood that the pump or outlet application which must be filled out in order to obtain a state permit to sell liquid fuels is quite detailed, and asks some 35 questions on which it is believed many dealers will require assistance. Consequently, many oil companies are contacting their dealers and offering assistance in every way possible.

According to reports, much of the information sought in the application is to be used by the Pennsylvania oil industry investigating commission in its report to Governor George H. Earle.

Senate Approves Item of $285,000 For Connally Act

WASHINGTON, June 28.—The Senate late today passed, and returned to the House, the Interior Department Appropriation Bill for the fiscal year beginning July 1, carrying, among other things, an item of $285,000 for administration of the Connally "hot" oil law by the Petroleum Conservation Division, and an item of $25,000 for experimentation in hydrogenation of coal by the bureau of Mines.

The $285,000 appropriation for Connally law enforcement is one of the Senate additions that will have to be concurred in by the House, which passed the bill late last month, before the appropriation bill can be sent to President Roosevelt for his signature. When the bill passed the House the Connally law had not been extended.

A plea by Paul E. Hadlick, secretary of the National Oil Marketers' Ass'n. to have the bill amended to prohibit the Bureau of Mines from issuing monthly forecasts of motor fuel and crude oil demand fell on deaf ears in the subcommittee hearings on the bill late last week, and the bill was reported to the Senate floor and passed without the prohibition Hadlick sought.

The NOMA secretary was successful when he made a similar appearance before a House subcommittee last month, and the bill as reported by this group banned the forecasts. The amendment was stricken out during debate on the floor, however, and the bill passed without the prohibition.

The Connally law was extended to June 30, 1939, by a bill signed by President Roosevelt June 14.

Nebraska Oil Men Told To Seek Tax Counsel

CHICAGO, June 29.—Marketers in Nebraska are asked, in the bulletin of the Nebraska Petroleum Marketers, Inc., to consult their legal advisers as to how they may operate under the undistributed profits tax, "before it is too late." The Bulletin has the following to say on the subject:

"Profit taxes by the federal government now are brought closer to the smaller petroleum dealers who may be lucky enough to have surpluses or 'undivided profits.'

"In some cases corporations are being dissolved to avoid the inequitable features of the 1936 revenue law. If your profits are tied up in inventories and accounts receivable and you pay cash dividends you may be compelled to seek funds for working capital.

"Experts think Big Corporations will not notice this as much as smaller corporations. If you retain your earnings for business operations it will be heavily taxed. If you pay dividends, then, besides amortization charges for bank loans, there is also a tax.

"It might be well to have your legal representative advise you on this point before it is too late."

Call Profits Tax Hazard to Worker

By Teletype

INDIANAPOLIS, June 29.—The Indiana Independent Petroleum Ass'n. scored the federal tax on undistributed profits as an unsound form of taxation which will lead to the destruction of small and medium business institutions in a resolution recently adopted by officers and directors.

The resolution, signed by Robert M. Stith, Stith Petroleum Co., Indianapolis, president of the association, reads:

"Be it resolved that the Board of Directors of the Indiana Petroleum Association, in session at Indianapolis, condemns without qualification the 1936 undistributed profits tax for the reasons that it is basically an unsound form of taxation and will lead to the destruction of small and medium sized business institutions, for the reason that it does not permit the creation of a surplus sufficient to safeguard the capital invested, and to tide over an unprofitable economic period with which we must be necessarily confronted every few years:

"Be it resolved that it hazards the investments which have been provided for employment and by it prohibiting a surplus reserve, by exorbitant tax, creates a grave hazard in depriving workers of employment during a depressed economic period:

"Be it resolved that a copy of this resolution be sent to the President of the United States, each senator and congressman from the state of Indiana and each member of the United States House Ways and Means Committee."

Relief Is Urged From Profits Tax

By Teletype
N. P. N. News Bureau

WASHINGTON, June 29.—The Senate has rejected the proposal of Senator Arthur H. Vandenberg, Michigan, to provide "a minimum measure of relief" from the undistributed profits tax by allowing credits for corporate earnings used for retirement of indebtedness.

Vandenberg's proposal was offered as an amendment to the resolution extending the nuisance taxes.

Chairman Pat Harrison, Mississippi, of the Senate Finance Committee, piloting the nuisance tax resolution through the Senate, objected that Vandenberg's proposal was out of place.

However, Harrison said he has been "very much in sympathy with some modifications" in the tax bill passed last year. He pointed out that the Treasury Department is studying the law now. "I hope, that we may have a modification of the law to suggest at some future date—not too remote," he said.

Vandenberg urged immediate action for relief of taxpayers by adoption of his amendment.

"I doubt if there is today," Vandenberg told the Senate, "any disagreement that, in the form in which the undistributed-profits tax was finally adopted, it not only has worked an inequitable hardship but it involves a very serious threat to the maintenance particularly of small industry in this country."

Va. Jobbers Urge Quick Repeal

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keters Assn., was unable to deliver his featured address on relations between a state and national jobbers association and it was read in his absence.

Cancer to Small Concerns

In his prepared speech, Whiting assailed the undistributed profits tax as "a rapidly developing cancer to all small industries and slow poison to big industries."

"The final result of this tax law will be communistic government ownership if it is permitted to stay on the statute books," Whiting declared. "I cannot urge you too strongly to put every effort forth to condemn to death this vicious law."

Whiting said that the national marketers' association is fighting for legislation to put the independent jobber on an equal footing with the major oil companies. He then outlined its program.

Resolutions were adopted by the Virginia association asking Congress to forbid the U. S. Bureau of Mines issuance of crude oil and gasoline demand forecasts; to repeal the oil "tariff"; to withhold approval of the interstate oil compact and to divorce pipelines and tankers from oil company control.

Other resolutions adopted endorsed efforts of the Citizens Road League of Virginia for a constitutional amendment to prevent diversion of highway funds and opposing the federal gasoline tax.

Writ Is Refused To Free Carlisle

(By Telegraph)

HOUSTON, June 29. — The plea of O. H. Carlisle, Gulf Oil Corp., for a writ of habeas corpus which would free him from appearing at the Madison, Wis., oil conspiracy trial was denied here today by Federal Judge Thomas M. Kennerly. The judge indicated he would enter no order until July 7. At that time, it was reported, attorneys for Carlisle will give notice of appeal to the Circuit Court of Appeals at New Orleans.

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HOUSTON, Tex., June 28.—Federal District Judge Thomas M. Kinnerly had under advisement today the plea for a writ of habeas corpus presented June 24 by O. H. Carlisle of Gulf Oil Corp. in his fight against removal to Madison for trial on oil conspiracy charges.

The plea for a writ was requested June 18 when Judge Kinnerly signed a commitment for Carlisle.

The hearing on the writ resulted in the introduction by Carlisle's attorneys of some additional evidence not placed in the records at the time of the removal hearing before U. S. Commissioner W. F. Carothers.

Carlisle's attorneys introduced into the records a detailed report of the Gulf Oil Corp.'s East Texas gasoline purchases during the period covered by the indictment. They also introduced a certified copy of a telegram from Secretary of the Interior Ickes, dated Nov. 1, 1934, and sent to Judge Amos L. Beatty, in which the then oil administrator urged the oil men to settle their differences and come to some agreement so that the industry could be stabilized.

Rangers Protect Office Force In Ft. Worth Strike

N. P. N. News Bureau

TULSA, June 28. — Organized labor in the oil industry broke mildly into the news in several localities in the Mid-Continent last week.

At Fort Worth, the Texas Rangers took a hand in the strike at the Lone Star Gas Co.'s plant. Several weeks ago the oil union called a strike which lasted three or four days. It had not been settled very long, however, until those who had walked out the first time again went on strike and went so far as to prevent the office force from going to work.

Appearance of the Rangers, sent there by the Public Safety Commission, drew protests from Fort Worth's city officials and was brought also to the attention of the legislature, where a resolution of condemnation was voted down.

The Rangers meanwhile have arrested and filed assault charges against several alleged strikers for attacking gas company employes.

Charges Filed

The Texas Co., meanwhile, has been charged, in a complaint filed before the National Labor Relations Board director at Fort Worth, with coercion and intimidation of employes at its Galena, Texas, refinery. The complaint was filed by the secretary of an oil workers' union. He was quoted as saying he had filed 13 affidavits and would file a total of 35, charging violations of the Wagner Act.

The complaint alleges the company, through its refinery foremen, was giving "financial and moral" support to an employes' federation and was "intimidating and interfering with workers in attempts to select a bargaining agency."

At the Muskogee, Okla. refinery of the Pure Oil Co., it was an official of the union who took occasion to deny reports that a strike was to be called there late last week. The official of the union said negotiations were in progress between the union and company representatives.

R. W. Pennell, president of the Humble Oil Co. Employes Federation, which was created by the employes as their bargaining agency, announced that the production and crude oil departments had signed a working contract. He said the contract called for a 36-hour week, some adjustments in pay, time and a half for overtime and a change in the vacation policy.

C.I.O. Seeks Election

LOS ANGELES, Cal., June 29.—The C.I.O. Oil Workers International Union has petitioned the National Labor Relations Board for an election at the Standard Oil Co. of California's El Segunda refinery to determine the collective bargaining agency for approximately 850 workers. The federal labor board mediator said a hearing will be held on the justification of the election demands.

Crowded dockets here and in Washington, however, will be likely to delay this investigation for five weeks to two months. C.I.O. officials say similar action is not contemplated for the present in other Standard of California plants or plants of other companies.

Rents vs. Margin Issue of Oil Strike

N. P. N. News Bureau

CLEVELAND, June 28.—A 50-50 compromise was reported today as the basis of settlement of a strike at South Bend, Ind., which had closed for eight weeks 15 stations and one bulk plant of the Sinclair Refining Co.

Company officials here refused to comment on the settlement, but lessees in the field reported in general the new rental was three-fourths cent per gallon.

The lessees, members of the Gasoline Station Operators Union, A. F. of L. affiliate, recently raised their margin to 4.2 cents per gallon, they reported, and shortly thereafter the company doubled the rentals to 1.5 cents per gallon, or imposed a rental on stations where none had been in effect before. Sinclair stations are classified into four rental brackets. Lessees also said there was a reduction in the price to them of lubricating oil in the settlement of the issue.

Dealers obtained products from other suppliers and remained open while the 15 leased stations and bulk plants were closed.

CHICAGO, June 28.—A new 3600-horsepower diesel-electric locomotive has been put in service by the Santa Fe on the Super Chief run between Chicago and Los Angeles.

Richfield Contract Wedge for C.I.O.

N. P. N. News Bureau

LOS ANGELES, June 26

The California oil industry looked askance at Richfield Oil Corp.'s agreement with the C.I.O. Oil Workers International Union on matters relating to working conditions of hourly rated employes in the production, natural gasoline, pipeline, refinery and automotive transportation departments.

Although the agreement was said to be similar to others signed by Consolidated Oil Corp. (the power behind Richfield) in other parts of the country with the oil union affiliated with the C.I.O., oil companies here were interested in its possible effect on the west coast.

Wilshire Oil Co. signed a 100 per cent bargaining agreement with this union earlier in the year, but the present development represented the first break in the ranks of major operating companies.

In the Richfield agreement, the union did not get much—wages and hours remained unchanged and only members of the association employed by the company were bound by the agreement. A cross check was declared under way to determine what percentage of some 1500 employes in the departments affected belonged to the union.

A strong union membership among refinery workers of this company was reported to have sponsored the recent agreement, with other departments dragged in as a matter of "principle."

There was no doubt in anyone's mind but what the signing of this contract would be used as a lever by the union in its campaign to organize the entire California industry. J. C. Coulter, secretary of the Long Beach local No. 128, had this to say about the matter:

Agreement Praised

"This agreement reached with the Richfield Oil Corp. is one of the finest agreements that has been entered into between our organization and any oil company. The agreement runs for a period of one year and thereafter until either party should desire a change in the agreement.

"Many beneficial conditions were written into the agreement, including annual vacations, sick leave with pay, amicable methods of settling disputes or grievances, additional pay for overtime, hours of work conforming with those in the oil code, etc.

"We found the management of Richfield very fair and reasonable in our negotiations. This Richfield agreement is the kind of an agreement we hope to be able to enter into with all of the operating companies."

Article XXIII of the agreement is regarded as enlightening evidence of future efforts of the C.I.O. to enroll nonmembers in the ranks of Richfield and other companies. It reads;

"Upon receiving written permission of the employer, accredited representatives of the association shall be granted the privilege of entering upon the premises of the employer at any time during the regular daylight working hours for the purpose of assisting in the settlement of disputes or grievances that may arise.

"If any employe desires a leave of absence in order to engage in any work pertaining to the business of the association, said leave will be granted by the local management and the granting of such leave, not to exceed one year, shall not affect such employee's seniority."

This last paragraph makes it possible for any persuasive individual in the company's employe ranks covered by this agreement to be drafted as an organizer for the association in its enrollment campaign.

The agreement provides working hours shall be those in effect as of the date of the pact, which is made retroactive to March 13, 1937. In case any changes in working hours are desired either by the employes or management, such changes are to be discussed with Workmen's Committee before they become effective.

The working schedule is based on a 36-hour week—which is prevailing practice among the larger companies—with the provision that 40 hours may be worked in one week if compensating reduction is made in the succeeding week so that no worker shall work more than 72 hours in any two weeks. The schedules are predicated upon an eight-hour day.

If employes are required to work outside regular hours for three days or less, time and one half shall be paid for the overtime. For periods exceeding three days and if 40 hours previous notice has been given, work in addition to regular hours is to be considered a change in schedule and paid for at the regular rate.

Gasoline Interchange Told In Pa. Commission Hearing

PITTSBURGH, June 28.—Testimony that competing brands of motor fuel are often identical gasolines, from the same storage tanks, was made at Oil City and Franklin hearings of the Oil Industry Investigation Commission of Pennsylvania last week-end, and labeled today by Common Pleas Judge Ralph H. Smith, of Pittsburgh, chairman, as the commission's "biggest story so far from the public's point of view."

After testimony of such interchange, Judge Smith asked Norman A. Davis, of the Mid-Penn Refining Co., Oil City, if advertising of various brands as having individual merit was not a waste of the motoring public's money. Davis replied that an advertising man would be more competent to answer. The question came after Davis had said that Essolene, brand of Standard Oil Co. of Pennsylvania, had been sold as Top Kick at Uniontown.

Sells to Many Majors

Judge Smith, who said he was a layman trying to learn what was common knowledge in the industry, pushed this line of inquiry in questioning Frank Berry, vice president in charge of sales of James B. Berry Sons' Co., Inc. Berry testified he sold unbranded gasoline to Standard Oil Co. of New Jersey, Freedom Oil Works Co., Socony-Vacuum Oil Co., Inc., Tide Water Oil Co., Sinclair Refining Co., Canfield Oil Co., National Refining Co. and others and that the gasoline, in so far as it met certain specifications, was identical to all.

Asked if he sold at a uniform price to all these majors, Berry answered, "We sell for what we can get."

"Does Standard Oil of Pennsylvania deliver to Pennzoil stations in the Pittsburgh area and Pennzoil deliver to Standard Oil station in this (Oil City) area?", Judge Smith asked William R. Birkmayr of Oil City, manager of the gasoline division of the Pennzoil Co.

"Yes, that's right," Birkmayr affirmed. Judge Smith repeated the question to Robert A. Brown, secretary of Pennzoil, adding that the exchange was "for the purpose of saving freight charges, was it not?" Brown said it was. He said the exchange was on "Q" gasoline, made to the specifications of each refiner-marketer, and that no money was involved in the exchange, merely a barter of products.

The commission pointed out that it had received suggestions that all gasoline be sold by grades, rather than brands: Grade A, Grade B, C, etc., each grade meeting certain specifications.

Price "Fixing"

Each of the ten witnesses who testified Friday at Oil City was asked what or who fixes the price in the Oil City-Titusville area. The commission received a variety of answers, including supply and demand, South Penn Oil Co., Platt's Oilgram, Atlantic Refining Co. and no one in particular.

The price of gasoline is set by competition from other crudes (outside of Pennsylvania), Fayette B. Dow, general counsel for the Pennsylvania Grade Crude Oil Assn., explained to the commission. He said this is because the Pennsylvania field produces only 40 per cent of the gasoline consumed in the state and that refiners here must naturally meet the price of gasoline made from cheaper crudes.

"Who took the lead in the last 15 cent rise in the price of Pennsylvania crude?" Judge Smith asked W. S. Zehrung, president of Pennzoil.

"We heard South Penn was going to raise its offer 15 cents and had to follow along to get crude," Zehrung said.

"Why did South Penn—a buyer—voluntarily raise the price?" Judge Smith queried.

He was referred to the manager of South Penn, but Zehrung opinionated that the company evidently felt the relation of supply and demand warranted the increase. "You must remember South Penn are also large producers," Zehrung added.

Queries on Contamination

Following the same train of thought as in his questioning on interchange of brands of gasoline, Judge Smith asked D. M. Sachs, of Oil City, president of the National Transit Co., common pipeline carrier, if there was any contamination of Pennsylvania crude with inferior crudes in his lines. Sachs replied that there was not; that parallel lines carried what Mid-Continent oil was transported in his system.

Judge Smith said the commission was trying to help the oil industry and asked Sachs if he had any recommendations. Sachs, who previously testified that producers who also buy crude, then transport it through their private lines were his competitors, thought it would be a fine idea if refiners were allowed to buy only crude transported by common carriers.

Cost Figures Sought

Judge Smith, who wondered why gasoline sold at 12 cents in Pittsburgh and at 16 or 19 cents a few counties distant, repeatedly sought data on the cost of making gasoline. Without exception, refiners replied they didn't know, since it was a joint cost product. A. W. Scott, of Reno, vice president and secretary of the Wolverine-Empire Refining Co., gave a typical answer:

"It's just pretty obvious we are losing money on it." He added that kerosine and fuel oil also seemed to be sold below cost, with lubricating oils and stocks as the money makers. Judge Smith later said he expected the commission would go into lubricating oil prices.

Scientific Methods

Repressuring of Pennsylvania oil fields by air was advanced as a means whereby producers could profitably sell oil at the present price of $2.82 a barrel, by C. C. Hogg, of Titusville, manager of the National Petroleum Co. and consulting engineer for small producers. Hogg's testimony came in response to questions by Judge Smith, in Saturday's hearings at Franklin, after a list of small producers asserted they were not making an adequate return or actually losing money.

Hogg testified the costs of producing a barrel of crude by companies employing him were $1.35, $1.82, $1.94 and $2.52, exclusive of depreciation, depletion, taxes and all such costs. These figures were lower than other producers who preceded him, whose total costs were given as high as $3.10 a barrel. Hogg said his companies had effected lower costs by large capital expenditures to utilize scientific methods of repressuring.

"Do you think it would then be advisable for smaller producers to form co-operatives so that they might aggregate capital and utilize such scientific methods?" Judge Smith asked.

"Well, there are a lot of human factors involved too," Hogg answered.

After it was established that some firms could market on $2.82 crude and other producers advocated higher price to the consumer, Judge Smith asked why the consumer should be expected to carry the marginal producers.

Several producers replied to the question, including W. J. Brundred of Oil City, president of the Brundred Oil Corp. If marginal wells were abandoned, the ultimate cost to society of recovering the oil later would be much greater, he said. Pennsylvania's resources would be abandoned to the benefit of Mid-Continent producers.

Judge Smith and John E. McComb of Rouseville, producer member of the commission, sought a villain responsible for the producer's plight. The testimony was practically as follows:

McComb: Who sets the price of crude in this field?

Brundred: I presume South Penn does.

McComb: Is it fair for them to set the price?

Brundred: It's logical for the biggest company to be the controlling factor and it is better that way. We have got to have stability and couldn't have all buyers paying all different prices.

McComb: Can't they squeeze the producers?

Brundred: We'd like a price that would give all (producer, refiner, marketer) a profit.

McComb: You testified you can't make a fair profit. Now can't we fix the price offered by South Penn?

Brundred: No, that's a matter of competition with western crudes. Judge Smith occasioned some laughter by asking Brundred if he would advocate Pennsylvania's imposing a protective tariff in the event the Mid-Continent were a foreign country.

Marketing Conference Of 9 States Sought

BUFFALO, N. Y., June 29.—As a result of letters and inquiries that have come in requesting more data and information on the results of the investigation of the oil industry in New York state by a special legislative committee, Harold B. Ehrlich, chairman of the committee, has written to interested groups in nine states urging an early conference to interchange ideas and develop a possible plan of united action in these states, with regard to oil marketing practices.

Ehrlich said that letters had come in from a number of committees, commissions and groups in other states and that his letter was an invitation to the chairmen and vice chairmen of those groups, inviting them to meet with his committee at a convenient location in order that they might obtain the benefit of his committee's experience and "obtain a better understanding of the problems."

According to Ehrlich, letters were sent to groups in the following states: Pennsylvania, New Jersey, Massachusetts, Michigan, Kansas, Virginia, Wisconsin, Illinois and Washington.

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Jobbers Should Plan Tax Laws That Will Bolster Business

By WARREN C. PLATT, Editor

Independent oil jobbers and small business men generally should not be in any hurry about accepting modification of the iniquitous undistributed profits tax law. They should fight to repeal the entire law and then fight for intelligent protection of small business enterprises under all tax laws.

In accepting anything less than this the small business men are quite likely to find that they have been traded into an unfortunate position. With all the kind words of the Roosevelt administration on behalf of the small man, the belief grows, as President M. B. Whiting of the National Petroleum Marketers Association said a few weeks ago, before the Virginia Oil Men's Association, that there is a plainly noticeable effort on the part of some not only to place government in control of big business, but also to put it in control of small business or wipe small business out entirely.

While tax laws are for revenue, or are supposed to be, they should be planned to conserve and build up business and not to hamper or destroy it. When the small business interests of the country fight this present undistributed profits tax law they could well set out a tax plan which would help small business and at the same time produce revenue.

It would seem that intelligent laws to tax business should invite:

1—The payment of debts.

2—Depreciation and the quick junking of all equipment, and the purchase of new.

3—The maintenance of good cash balances and proper reserve funds.

The present effect of the income tax and the undistributed profits tax is just the opposite of the above stated aims. No matter how much a business has lost money or gone into debt, the minute it makes a little money, the government pounces on that profit and collects 16 per cent of it in tax and upwards of 27 per cent of the remainder through the undistributed profits tax, to say nothing of all the many other regular and special taxes that business pays.

No matter how old or obsolete a business's equipment is, the government is quite stingy with its depreciation allowances; in fact it puts a premium on hanging on to old equipment. After all this there cannot be a decent cash balance.

Business could well demand of the socialistic and communistic minded at Washington that exemptions in tax laws be granted that will foster and build up small businesses, which should go a lot further to relieve unemployment than grabbing the small profits when small business happens to be so fortunate as to make them.

Independent jobbers could well get together and, with the advice of tax experts, develop a definite tax program for all to work to.

A Second Double Cross

On the eve of trial of the federal government's criminal prosecution of oil men and companies at Madison, Wis., for their activities under the late NRA code and for co-operating with the administration to stabilize the industry, comes a decision from the Texas Supreme Court which reinstates the suit by that state to oust its leading oil companies for trying to carry out some years ago a code of fair practices promulgated and approved by the Federal Trade Commission. Some of the same companies now on trial at Madison will have to stand trial in Texas again for complying with what they thought was the law, at least for doing what had been approved by government agencies.

Neither the case at Madison nor the one in Texas are at all flattering to government. Both seriously raise the question if a business, particularly the oil industry, can put any confidence in government officials; both would seem to raise the point that, if government officials think they can gain any personal advantage from double crossing an industry, they will do it.

While Texas was not a party to the Federal Trade Commission proceedings and its code of some years ago, nevertheless, if the officials of Texas had been interested in being fair to the oil industry, which is such an important factor in that state, and if those officials thought that some features of the code provisions were against the interests of the people of Texas, common decency and fair play would have suggested that if Texas could not agree to the provisions, then it should have given the companies notice not to practice the alleged objectionable features in that state.

Both cases have some ugly features to them that, when brought out at trial, certainly will not increase one's respect for those people who at present represent government.

The landowners of Texas have a direct interest in the oil business to the tune of some $145,000,000 a year. This is hard money of the U. S. paid by the oil industry to these landowners for the USE of the sub-surface of their lands. This money is for the payment of rentals on oil leases, bonuses to farmers for the giving of oil and gas leases and the payment of oil royalties for the privilege of producing the oil day by day.

The oil industry, in every oil state, has had the opportunity of telling this story every year for 78 years but it seldom does. This year the industry is indebted to President Weiss, of the Humble Oil & Refining Co., of Houston, who told it to a recent meeting of Texas bankers. We hope he will tell it to many more groups before the year is ended because if the farmers realized their great and immediate interest in the oil industry, they would aid the industry as its partners, which they are, in protecting itself from political attack.

Ellick Botts WRITES A LETTER

Our Gray Horse Correspondent Contemplates Revived Ouster Suit

To the Editor:

Well, I read in the papers that the famous trust-busting affair, which Jimmy Allred started away back when co-operation in the marketing business first reared its ugly head, has been revived by the Texas Supreme Court and if the Madison folks think they are going to get all the attention on their show they are mistaken. I'll bet that the Texas suit will last twice as long and be three times as uninteresting.

I am moved to write some personal recollections of the Texas matter on account of I was in close touch with it back in 1931 and 1932 when it first flared up. You may recall that you commissioned me to sit in on the show and write some accounts of it which I did, although it was difficult to make a week's proceedings fill a column.

Gov. Allred was then the attorney general and he was quite full of what our old friend F. W. Fisher of Tyler, would refer to as "fosenarity" that being a word Bro. Fisher made up one day with which to corner a technical witness. The young attorney general has since gone on to better things and this big ouster suit was at least one of his springboards. Mr. McCraw is now the attorney general and it is quite generally reported that he slipped in one day and had the governor's chair calibrated to see if any alternations would be necessary. My guess is that somebody will be running for office on this ouster suit 50 years from now.

The affair never did get into the trial stage. Mr. Allred reached out and collared a few witnesses who lived afar and put them under oath before a commissioner. He then proceeded to ask questions. He got in about three questions per day, as after each query, the witness' lawyer would rise with an objection of about 500 words and he would be followed in turn by lawyers for the 16 other defendants, each of whom would adopt the objections previously made and add several of his own. After all this, the witness would give some kind of an answer. Usually he had to ask the stenographer to read the question as two or three hours would elapse between question and answer.

They had "Bill" Boyd in the chair for days and days. The attorney general found out that Mr. Boyd lived at Teague, Texas, but had been temporarily in New York for 15 years; however, Teague was still his home. There were some other pertinent bits of information, such as Mr. Boyd's occupation and his salary.

Well, they filled up a few thousand pages of record with material like this. Paul Hadlick was one of the witnesses. He was then with the American Petroleum Institute and his job was to help the companies think up new ways of being ethical in their marketing division. They did get up a very flossy set of rules by which it was declared to be unfair, or at least deplorable, if anybody sprouted any retailers by giving them pumps, grease racks, cement driveways and season passes to the ball park. Mr. Allred thought this was a bad thing from a public standpoint and this 150-page petition implied that Utopia would be reached when everybody owned a filling station at which he sold the products of every refiner in the business.

Well, I can't remember that much came of this code except Mr. Allred's suit, for nearly every company subscribed to the new petroleum decalogue with the understanding, in writing, that it would "meet competition" on the traditional basis and, if I remember correctly, everybody found he was swamped with competition. I remember suggesting to the attorney general that, instead of his suing the companies for ending competition, the companies should be at law with each other for non-performance of an implied contract.

I now look back on the long stretch in Austin when I was representing you with great pleasure. The deposition taking stopped promptly at four o'clock each afternoon and Burney Braly, who was sitting in for the Continental Oil Co., and your correspondent would be on our way to the golf course at 4:01. We got all caught up with our golf, although I do not recall that we got any better. Also, at 4:01 Paul Hadlick started off to ride a horse, which occupation he esteemed very highly.

So, as this cause of action is again going to occupy attention again some of these weeks, I am writing you early to see if I can have the assignment again. I feel that I can do justice to the suit in a reportorial way and at the same time stimulate employment among the caddies.

Yours truly,
Ellick Botts,
amicus curiae

It's True, Michigan To Divert General Funds For Highways

LANSING, Mich., June 28.—The worm has finally turned—and after years of states dipping into gasoline tax receipts for anything from frog propagation to school aid, along comes Michigan to dip into the general fund to aid highway construction and maintenance.

The law, Senate Bill 330, was signed last week by Governor Murphy, and is a continuing appropriation of $5,000,000 annually from the general fund.

Instead of digging deeper into the motorist's pocketbook through a gasoline tax increase, the highway department sought additionl funds from the general fund.

The bill is brief, only one paragraph, and with the customary legislative introduction requires only the front page in printing.

The appropriation is $5,000,000 annually from the general to the highway fund beginning with the fiscal year ending June 30, 1938 "for the construction, maintenance and improvement of highways." According to Henry G. Hunt, secretary of the Michigan American Petroleum Industries Committee, a bill of a similar nature is now before the legislature to appropriate an additional $2,000,000 from the general revenue fund for use by the counties in highway improvement and an additional $600,000 for the state highway department, for snow removal.

Will Extend Gasoline Line To Buffalo

PHILADELPHIA, June 28.—Construction was scheduled to start July 1 on a $1,700,000 extension of the gasoline pipeline of the Keystone Pipe Line Co., transportation subsidiary of the Atlantic Refining Co., from Williamsport, Pa., to Buffalo. The extension is being installed in conjunction with the Buffalo Pipe Line Corp.

Contract for the 8-inch pipe required for the 213-mile extension was awarded the National Tube Co., Pittsburgh. Jones and Hanrahan, Dallas, received a contract in neighborhood of $700,000 to lay the pipe.

Autos Use 55% of Lubes

NEW YORK, June 28. — Motor vehicles, including passenger cars and trucks, consumed 22,000,000 barrels of lubricating oil in 1936, an increase of about eight per cent over 1935, according to the American Petroleum Industries Committee. A little over 20,000,000 barrels of lubricating oil were consumed by industry in 1936, indicating that over 50 per cent of total consumption was used by motor vehicles.

Since 1931 motor vehicles have been the chief users of lubricants. In 1933, when automobile registrations dropped below the 1932 level, automotive consumption of lubricating oil amounted to 58 per cent of the total lubricants used.

Phillips Honored

BARTLESVILLE, Okla., June 28. — Frank Phillips, president of Phillips Petroleum Co. has been given a unique badge by employes of the company, in honor of the 20th birthday of the company. The badge, modeled after the service shields worn by Phillips employes, is 4 inches in diameter. It was made of brass from a valve used in the construction of the company's first gasoline plant.

LANSING, Mich., June 28.—A special session of the Michigan legislature in about 60 days is anticipated to deal with income and sales taxes.

Dual Rail Rate Structure Proposed To Fight Trucking

By JACK WESTSMITH
N. P. N. News Bureau

LOS ANGELES, June 26

Efforts on the part of railroads in the Pacific Northwest to regain a major portion of gasoline traffic lost to contract truckers in the past five years are being watched with particular interest by the Pacific Coast and Pacific-Mountain oil industry.

Developments in this direction are important because of their possible effect on future movement and handling of refined petroleum products. As a whole, the industry has gone on record as opposing any change in the method of establishing rates in this area.

Upon request of attorneys for the railroads, the time for filing briefs in Investigation and Suspension Docket 4281, of the Interstate Commerce Commission, was extended from June 14 to August 15 for all parties concerned.

This is the latest development to come out of a series of hearings conducted by the ICC, in joint session with railroad commissions of Oregon and Washington, to decide the right of railroads to offer dual minimum rates on movement of petroleum products in this northwest territory.

In a supplemental tariff schedule, published by the rails, to become effective last December, the shipper was offered a lower rate on larger minimum quantities. One rate would be established on tank capacities —for either tank car or truck —up to 33,000 pounds—5000 gallons of gasoline; another rate, approximately 10 per cent lower, would apply on quantities between this minimum and up to 52,800 pounds—8000 gallons; and a third rate would cover shipments in excess of this minimum, also about 10 per cent lower.

Upon application of the truckers, the lower rates were suspended and the joint hearings were held to gather evidence on the railroads' proposal from all parties concerned. Traffic managers of several oil companies offered testimony on behalf of the truckers against the dual minimum rates.

Hit at Truckers

The trucker took the logical position that these "bargain" rates offered by the rails would result in a substantial loss of long-haul gasoline traffic. No truck could meet the 8000-gallon minimum and many have capacities of less than 5000 gallons. One railroad witness confidently predicted that the lower minimum rates would bring about a 100 per cent increase in rail shipments of these products.

Gasoline would be the principal product affected, although kerosine and other refined products would be included.

Exhibits introduced by the railroads showed a steady loss in the tank car movement of bulk refined petroleum products from the coast to eastern Washington and Oregon points since 1931. In spite of the increase in gasoline consumption in the affected territory, it was shown that rail movements remained at approximately the 1931 level.

Another witness endeavored to show that the per ton revenue under the suspended rates was not unreasonably low. He said the rates were reasonable and should be established without regard to their relationship to tank truck rates.

Cross examination by attorneys for the truckers attempted to bring out that loss of traffic by the railroads and thus failure to obtain part of the normal increase was due to the fact that, before tank truck rates were established on a parity with tank car rates—in 1936, the rails were at a disadvantage. It was declared that now, however, they could anticipate part of this business would revert to them on the equal rate basis.

Would Regain Traffic

There was no beating around the bush by railroad witnesses in predicting what the lower rates on higher minimum capacities would mean to these carriers. It was stated that the suspended rates were for the sole purpose of retaining and, if possible, regaining all oil traffic the rails now have lost or may lose to the trucks.

Need for lower than truck rates was seen by the railroads if they are to compete on a parity. It was declared that parity of rates between rails and trucks did not mean a parity of charges and service, where the trucks had the advantage.

On the other hand, George Eastes, West Coast Transport Co., said that tank trucks could not secure business from oil companies unless they were on an equal rate basis. He pointed out that tank truck transportation had been stabilized within the past year, due to voluntary action on the part of operators, as well as through regulations by states and the Interstate Commerce Commission. He felt the rails should not be allowed to cut rates, which would only lead to rate wars.

At one point in these hearings, which took place the latter part of May, the possibility was discussed that the dual minimum rate arrangement might spread to other territories outside the scope of the hearing. This development, it was felt, would result in demoralization of the rate structures and would place a considerable burden on the oil shipper.

Penalize Oil Companies

To accommodate the larger shipments made in taking advantage of the lower rate, it was pointed out that the oil marketing company would have to build larger storage tanks at their inland bulk stations. Or they would have to buy small tank cars to supply present small storage, if they did not increase the storage capacities.

In answer to this assertion, it was contended that an ample supply of small tank cars was in the hands of either the oil companies or tank car lines which were available to shippers maintaining small substation tanks.

Attorneys representing the truck group said the main objective of the rails in this case was to have the ICC allow the suspended rates to go into effect and thereby confirm the claims of the railroads that they should always have a differential under trucks.

Perhaps the most telling witness for the respondent truckers was P. H. Kuhns, Continental Oil Co. He registered two chief objections to the suspended rates: first, that graduated rates on tank cars of different capacities was an innovation; second, the possible effect on petroleum rate structures in other territories—particularly in the area immediately east of Oregon and Washington.

He said the railroad's loss of tonnage to tank trucks in the territory covered by the hearing was not unique and contended that the principal reason for this loss was due to lower rates charged by trucks in the past.

He was of the opinion that both forms of transportation should be fostered and that repeated rate wars resulted in ruinous rate levels, harmful to everyone. He said he knew of no justification for allowing lower rates to the rails than to trucks and said that his company would not pay tank trucks a higher than rail rate.

Another point he made was that the dual minimum arrangement would lead to endless confusion in quoting prices and in bidding on oil business. He declared that Continental operated numerous sub-stations with 8000-gallon and 10,000-gal-

Congress Extends Nuisance Taxes for Two-Year Period

N. P. N. News Bureau

WASHINGTON, June 28.—President Roosevelt had before him for his signature the resolution (H. J. Res. 375) extending for two years the federal gasoline and lubricating oil taxes, the tax on transportation by pipeline, the tax on imports of petroleum products, and other so-called "nuisance" taxes originally levied by the Revenue Act of 1932.

It is the third extension of these excise taxes since they were originally passed, back in 1932, as "temporary" revenue producers.

No hearings were held on either side of the Capitol on the extending resolution, introduced by Chairman Robert L. Doughton of the ways and means committee.

During Senate debate on the measure, Senator Arthur H. Vandenberg, Michigan, pointed out that "many affected persons" sought hearing on the taxes, adding:

"I do not know whether or not, under the present dispensation, the taxpayer has any rights; perhaps all he is entitled to is a chance to pay after he gets 'soaked' . . . "

Vandenberg, who sought a one-year extension only, declared there was "no possible justification to extend them for two years without hearings . . . . that an extension of one year is the utmost limit in fair play to those who must assume the burden of paying the assessments."

Senator Tom Connally, Texas, democratic member of the finance committee, fought against a one-year extension, claiming that the $650,000,000 annual revenue the taxes produce was necessary and probably would be necessary for some time to come—"perhaps for 10 years," he said.

lon capacity storage tanks and would be compelled to ship at the higher rates, thereby suffering a penalty.

He also pointed out that, on the movement of petroleum products the shipper must furnish the equipment and that the dual minimum rates would be discriminatory by reason of the fact that on other commodities shipped on a dual minimum rate structure, rail carriers furnished the equipment.

Oil Co-ops Oppose

The farm bureaus and cooperatives introduced two witnesses in protest of the suspended rates. They claimed they could not use the proposed low rates on 8000-gallon cars as their storage was limited in capacity and had to be supplied by small tank cars or tank trucks.

There was some discussion of the California Railroad Commission's decision in case No. 4079, where two minimum rate schedules were established—one for trucks and another for rails. This decision authorized the trucks to set certain rates up to distances of 290 miles which could be met by the rails if they desired. Above that distance—rates set by the rails could be met by the truckers. This amounted, it was declared, to the same rates being offered by both forms of transportation.

It was also brought out that the California minimum rates were generally on a lower level than those proposed for the northwest, but that the low rates in that state were no justification for the proposed rates under discussion in this case.

Consideration was also given to the Interstate Commerce Commission ruling covering transportation of petroleum products from California to Arizona. In Docket 4189, the commission allowed low rail rates to take effect over protests of truck operators.

Actually, truckers operating between California and Arizona have met the low rail rates to points served by railroads and post higher rates to locations not supplied with rail facilities.

Low rail rates allowed by the ICC on movement of petroleum from California to Oregon, could not be met by the truckers and forced their withdrawal from the field.

Although in this Pacific Northwest case, the railroads claim the shipper should be compensated for the additional expense of constructing larger storage at delivery points by lower freight rates on large quantity shipments, the oil industry is opposed to a saving on one hand that might result in loss and complication in handling its products on the other.

Chain Tax Bill In Wis. Assembly

By Teletype

MADISON, Wis., June 29.—During the current session of the Wisconsin legislature several chain store bills have been introduced, but the one receiving most attention from marketers in that state is known as a substitute amendment No. 2-A to bill 77-A. This law is copied after the Louisiana chain store tax law, which has been held constitutional by the U. S. Supreme Court. One hearing has been held by the assembly. The first action will be by that body.

The bill specifically includes petroleum bulk plants, but exempts gasoline service stations with assessed personal property valuation under $1500.

The bill points out that stores and bulk plants operated in multiple units have an advantage over single individually-owned and operated stores, and as such, should be classified separately for taxation purposes.

The tax ranges from $10 to $660 for each unit, depending on the number included under the same general management, supervision, ownership or control, either operated in Wisconsin or not.

Following is the schedule of the proposed tax: $10 for each unit of a chain of not more than 10; $20 for each in chains of 10 to 20; $50 for each in chains of 20 to 50; $100 for each between 50 and 100; $200 for each between 100 and 200; $300 for each between 200 and 300; $400 for each between 300 and 400; $500 for each between 400 and 500. A top of $60 for each unit in chains of more than 500 sales outlets.

Naval Oil Reserve Bill Hearings to Reopen

N. P. N. News Bureau

WASHINGTON, June 28.—Hearings on Senator David I. Walsh's bill (S. 1131) to consolidate naval oil reserve lands in California by purchase or condemnation by the government of privately-owned lands within the reserve boundaries will be resumed by the House Naval Affairs Committee soon, according to Chairman Carl Vinson, Georgia.

Vinson's committee started hearings on the bill early in May, but abruptly halted them and sent a letter to Attorney General Homer S. Cummings asking him if it would be possible for the government to recover the lands without the necessity for going through purchase or condemnation proceedings.

The lands in question were patented to the Southern Pacific Railway by the government in 1866, before it was known there was oil under them, of course, and the committee considered the possibility of invalidating the patents and recovering the mineral rights.

Cumming's reply to the letter put an end to such hopes, however. The Attorney General cited a "statute of limitations," passed in 1891, which provided that "suits by the United States to vacate and annul any patent shall be brought within six years after the issuance of such patent," and added, parenthetically, "the statutory period of six years has, of course, expired."

Vinson did not indicate how soon his committee will again take up the Walsh bill, already passed by the Senate.

Trucker Seeks Permit Over Rail Protests

WASHINGTON, June 28.—Declaring that the truck service of Ray & Starr, contract carriers of gasoline in Oregon and Idaho, is "peculiarly adapted" to the needs of their clients, a joint board set up under the Motor Carrier Act has recommended to the Interstate Commerce Commission that this concern be granted a contract carrier permit for trucking in those two states, as well as a certificate allowing it to extend its operations.

Ray & Starr, of Baker, Ore., filed application for a permit to carry gasoline in transport tank trucks from Linnton, Ore., to Boise, Idaho, and certain intermediate points. The application was opposed by the Union Pacific, which challenged validity of applicants' purchase of the truck line recently, as well as the "continuity" of operation demanded under the "grandfather clause" of the Motor Carrier Act.

The truckers also sought ICC permission to extend their operations to include gasoline hauling from Portland to Emmet, Nampa and Boise, Idaho. They were cross-questioned on this application by Union Pacific attorneys at the joint board hearing. Both applications will be granted if the ICC follows the joint board's recommendations.

'Gas' Will Sell By Grades, Not Brands in South

RALEIGH, N. C., June 28.—North Carolina's new law providing for the grading of motor fuel "according to scientific tests and ratings" becomes effective July 1, but it will likely be a month or more before it is in actual operation.

The law, sponsored by Representative Oscar Barker, Durham, at the recent session of the state legislature, provides for a state oil inspection board which will prescribe specifications for the various grades of motor fuel sold. Every filling station pump will have to carry a placard stating the grade sold from that particular pump.

Inspection Board

Governor Clyde R. Hoey said he would appoint the inspection board shortly. The board will hold public hearings before establishing the grades for motor fuel, it is understood. Filling station operators will then obtain the required placards.

The present inspection department has recently purchased apparatus for testing the gum content of motor fuel and devices for testing the octane rating of gasoline have been ordered with delivery expected July 10.

Defendant Replies In Fair Trade Suit

LOS ANGELES, June 29.—Assertion that Howard Cook of Ocean Park, Cal., proprietor of Cooks Service Station, at no time purchased for resale, but acted as agent for Richfield Oil Corp., was made in his answer to charges of violation of the California Fair Trade Act.

Cook was alleged to be a price cutter in a suit filed by two competing service station operators and the Retail Petroleum Dealers Ass'n. The purpose of the action is to test California Fair Trade Act, which prohibits selling below price stipulated in contracts with the supplier.

The answer filed by the defendant also indicated that the defense would state that the Richfield Oil Corp. is the only party with the right to bring action under the act and that the retailers association had no direct concern in the matter. Trial date has not been set.

Wisconsin Jobbers to Discuss Marketing Plans July 14-15

MILWAUKEE, June 28.—Establishment of an independent group marketing plan for Wisconsin jobbers will be discussed at a special meeting of the Wisconsin Petroleum Ass'n. in the Schroeder Hotel here July 14 and 15. All independent jobbers in the state are invited.

The idea of establishing a state-wide brand and independent marketing plan, enabling jobbers to fly their own globes, was formulated at the Wisconsin Petroleum Ass'n. convention here last February.

At that time a committee headed by A. C. Breuch, Pennsylvania Oil Co., of Wisconsin, Madison, was appointed to study the feasibility of a marketing plan. It will be explained in detail at the July 14-15 meeting.

At this meeting refiners who have agreed to sign up under the plan will present their proposals. This, along with the special committee's recommendations, friends of the plan said, will give independent jobbers a means where they may regain independence in marketing.

Trucks May Deliver On U. S. Contracts

N. P. N. News Bureau

WASHINGTON, June 28.—Transport tank trucks and trailers, already cutting deeply into rail deliveries of petroleum products to jobbers, dealers and commercial consumers, now threaten to take over some of the "tank car" shipments in government oil contracts.

For the first time, government agencies are offered the choice of tank car or truck delivery of gasoline and fuel oil in some of the July-September "tank car" contracts just awarded by the Treasury Procurement Division.

Officials of the TPD will watch closely deliveries by trucks instead of tank cars, studying results from the standpoint of savings in cost, convenience and other advantages. Truck deliveries are f. o. b. storage tanks of the government agency ordering under the contract.

MADISON, Wis., June 29.—The Wisconsin jobbers' fight to have their shrinkage allowance on gasoline increased from two to three per cent met with partial success when Assembly Bill 798 passed the assembly. The bill is now before the senate.

Dresser Mfg. and Clark Bros. Co. In Merger

PITTSBURGH, June 28.—Merger of Clark Bros. Co., Olean, N. Y., builder of two-cycle gas engines and compressors, and S. R. Dresser Mfg. Co., Bradford, Pa., leading manufacturer of flexible pipe joints for gas-transmission lines, was effected June 24.

Both companies have served the oil and gas industries over half a century. In recent years, the Dresser company entered the gas-engine field with a new radial-type gas engine and compressor of its own, of two-cycle design. Under the merger engine operations of both companies may be consolidated at Olean.

The Dresser company established a Canadian subsidiary in 1931, Dresser Mfg. Co., Ltd., Toronto. In 1933, the Dresser interests acquired the Bryant Heater Co., Cleveland, manufacturer of gas boilers, furnaces, burners, heaters and air-conditioning equipment.

Officers of the S. R. Dresser Mfg. Co. are: Fred A. Miller, chairman; H. N. Mallon, president; and M. N. Davis, executive vice-president. Officers of Clark Bros. Co. are: C. P. Clark, president and J. B. O'Connor, vice-president.

Valvoline Asks Review On Pipeline Order

N. P. N. News Bureau

WASHINGTON, June 28.—A petition for a rehearing on contention of Valvoline Oil Co., Cincinnati, O., contention that its pipeline operations are not those of a common carrier in interstate commerce and hence not subject to Interstate Commerce Commission regulation has been filed by the company.

Valvoline recently was ordered to comply with the ICC valuation orders under which more than 50 pipeline companies have filed with ICC inventories from which tentative valuations of their properties, for rate-making purposes, are being made up by ICC's valuation bureau.

The company's new petition sets forth that, while at a previous hearing it was shown that oil was shipped in its pipelines for other companies, there was no testimony showing "clearly" that this crossed state lines, and that since then the only oil transported by them in interstate commerce has been bound for Valvoline's refinery.

Four Reports Issued

Four tentative valuation reports have already been issued by the valuation bureau, with more expected during the summer and fall months. Properties tentatively valuated so far include those of Atlantic Pipe Line Co., Gulf Pipeline Co., Sinclair Prairie Pipe Line Co. of Texas and Sinclair Prairie Pipe Line Co.

Farthest advanced of these in the ICC procedure is Atlantic's an oral argument on whose protest against the tentative valuation of $14,250,000 for carrier-owned-and-used properties, is scheduled before the ICC for July 9.

Hearings before ICC examiners have been held on both Atlantic and Gulf protests.

6.6 Lbs. Case Entered By Feldman Co.

N. P. N. News Bureau

WASHINGTON, June 28. — Adopting the same allegations against railroads using the 6.6-pounds-per-gallon weight estimate for shipments of gasoline as did Tankar Gas, Inc., Minneapolis, the original complainant, Feldman Petroleum Co., Chicago, has joined the long list of intervenors in the case, which is to be heard by an Interstate Commerce Commission examiner at Minneapolis within the next few months.

Feldman's petition to intervene in the case, in which the validity of rates based on the 6.6 pounds estimate is attacked, asserted that their shipments of gasoline have weighed actually approximately 5.7 pounds per gallon, instead of the 6.6 for which rates were charged. The petition was granted by ICC.

To Modernize Refinery

(By Telegraph)

LOS ANGELES, June 28.—Richfield Oil Corp., today is opening bids for $5,000,000 for modernization of its refinery at Watson, Cal., which will increase the plant's capacity 25 per cent.

The new program calls for construction of two combination topping and cracking units, each of 30,000 barrels daily capacity and a polymerization unit with daily capacity of 6,000,000 cubic feet of refinery gas, all to be completed in about one year. The new plant will be designed to use electric power almost exclusively. The officials say the types of units to be constructed will not be known until bids are approved.

To Test Selling Below Cost Law

LINCOLN, June 28.—Nebraska's new law against "loss leaders" has been invoked against a Lincoln oil jobber and retailer.

Charges of violating the law against selling below cost were filed recently by the Lancaster (Lincoln) county attorney against Jack Coons, United Consumers Co-Operative, Inc. Coons has a station just north of Lincoln on Highway 77 near the airport and operates also as a jobber. He is charged with selling gasoline below cost.

Reports are that the suit is a friendly action under the new law, and that charges may be filed against other oil marketers.

The new law, L. B. 137, enacted by the recent unicameral legislature, was sponsored by druggists and a federation of Nebraska retailers. Elimination of "loss leaders" that entice customers to a store was the aim of the law.

The law prohibits secret discounting and premiums. To define a "loss leader," the law establishes a formula of cost of merchandise, plus freight, plus 6 per cent mark-up to cover selling cost, unless a retailer can prove that his selling cost is less than 6 per cent.

Tell Public of Oil Taxes, APIC Urges

NEW YORK, June 28.—As a means of lightening the taxes levied on the petroleum industry and improving general economic conditions, a common crusade by interested groups to focus public attention on these taxes is suggested by the American Petroleum Industries Committee in its fourth annual report.

The report, a review of important subjects before the oil industry the past year, was prepared under the direction of Baird H. Markham, director.

Organized four years ago, the committee extends its activity and influence into any spot where a tax or other petroleum measure is being introduced. During the past year 1890 of these measures affecting petroleum directly or indirectly bobbed up in Congress and in the state legislatures.

The committee specializes in tax research, disseminates this information and opposes discriminatory taxation and legislation. The report summarizes all state legislation.

WASHINGTON

By A. M. PETTY
N. P. N. Washington
News Bureau

From the Crown Block . . .

WASHINGTON, June 28

Fresh rumors of another onslaught on Connally "hot" oil law are cropping up, this time by a group in Texas said to be seeking a temporary suspension of the law so that they can move allegedly "hot" oil out of the Lone Star State.

President Roosevelt has signed the bill extending the Connally Law; it's on the books now until June 30, 1939. And Congress, in the next day or so, will appropriate funds for enforcement of this law against interstate shipment of "hot" oil.

This Texas group, almost up to the time the bill reached the President's desk for signature, hoped that something might happen so it would not become effective in time to prevent the Connally law from lapsing on June 16.

Strangely enough, they made no move against the Connally law until after the House on June 3 had passed a bill extending it for two years (the Senate weeks before had passed a bill making the law permanent). No producers, in fact, opposed extension of the Connally law.

But early in June this Texas group is said to have begun maneuvering to entangle the extension bill in a parliamentary knot so that the Connally law would lapse. During the week or so before a new law could be jammed through Congress, this group hoped to move out the alleged "hot" oil, it is said.

Some people think that these efforts might have succeeded, if the group had not overplayed their hand and friends of the Connally law within the Administration heard of the move and acted to circumvent it.

Suspend Connally Law

Now, this same group is reported to be aiming at accomplishing their purpose through a temporary lifting of the ban on movement of "hot" oil across state lines.

In the Connally law, there is a little-noticed provision (Section 4) which authorizes the President to suspend the law when he finds that it is causing a "lack of parity" between the supply and demand for crude petroleum and its products. When the out-of-balance condition has passed, the President may put the law back into effect again.

During the period of suspension, however, "hot" oil and its products could be moved in interstate commerce—or exported—with impunity. The Federal Tender Board, set up in East Texas oil field under the Connally law, would be powerless to stop the flow of illegally-produced oil out of the state.

Logically, the first step in the Texas group's plan, if the rumors be true, would be to raise a hue and cry that the Connally law has caused a "shortage" of crude or petroleum products. Efforts would be made to show that there is a great consumptive demand which cannot be satisfied with the present supply. Attention would be directed to "huge" quantities of "cheap" crude and products stored in Texas which allegedly cannot move in interstate commerce because of the "hot" oil law.

Of course, once the Connally law was suspended, not only could all illegally-produced oil in storage be shipped interstate but all that could be produced while the federal law is in abeyance.

There is a rumor circulating that the Texas group has asked a relative of a high-ranking politician to aid them.

Jobbers Embarrassed

Independent oil jobbers who opposed unsuccessfully extension of the Connally law, under leadership of Paul E. Hadlick, secretary of the National Oil Marketers Assn., have been placed in a somewhat embarrassing position by these reports of a movement to suspend the statute so that allegedly "hot" oil can be disposed of.

Time and again in their fight against the Connally law before congressional committees, these Independent jobbers insisted that their opposition was not induced by a desire to buy "hot" oil or its products.

Basically, the jobbers' contention was that the Connally law, coupled with the interstate oil compact, the Bureau of Mines forecasts of demand for crude and gasoline, and the excise taxes on oil imports, had enabled the major oil companies to "squeeze" the Independent oil marketer.

They resisted strenuously all efforts by Senator Tom Connally, Texas, and other supporters of the "hot" oil law to impute other motives to the jobbers' opposition.

Jobbers Deny "Hot" Oil Link

Now, these jobbers, through Hadlick, are just as emphatically disclaiming any connection with reported moves to temporarily suspend the "hot" oil law. And all the more so because arguments similar to those raised against the Connally law by the jobbers may be put forward to camouflage the source of the suspension movement.

"A temporary suspension of the Connally law," Hadlick says, "would be of no benefit to the Independent oil jobber. It would benefit only the 'hot' oil producer and the purchasers of 'hot' oil products—none of whom belong to our association.

"The National Oil Marketers Assn. fought to have congress wipe the Connally law off the statute books entirely or else amend it to protect the Independent oil marketers—that is, by tacking on our amendment to prevent the major oil companies from using profits from their production and pipeline operations to subsidize their losses in marketing," he added.

"We have absolutely no connection with this movement, which we hear reports of, to suspend temporarily the Connally law," the NOMA secretary emphatically declared. "Moreover, we have no plans of our own to seek such suspension—we couldn't have; we could take no such step until it was approved by our membership. It was not authorized at our Chicago convention last year; and our next convention will not be held until October."

Dashes "Hot" Oil Hopes

Hadlick's emphatic disavowal of any connection with a movement to suspend the Connally law serves notice that support of Independent oil jobbers cannot be expected by anyone planning to use this means of moving "hot" oil.

Indeed, in view of Hadlick's firm attitude, it would not be surprising if nothing more is heard of a movement to suspend temporarily the "hot" oil law for this purpose.

The Texas group, if the rumors be true, may find that it has counted on cards not in their hand and over-estimated the value of cards they hold.

New Device Lets Truck Driver Signal 'All Clear' To Motorist Behind

N. P. N. News Bureau

WASHINGTON, June 28.—"Is it safe to pass?"

This question is presented to every motorist on the highway today—and at no time more forcibly than when he has come up behind a wide, high truck which blots out his vision of the road ahead.

Truck drivers, noted for their road courtesy, would be glad to "telegraph" a report back to the hesitant automobilists, and many do, with a wave of the hand. But many more are prevented by the dimensions of their trucks or their lack of facilities, from signalling to the cars overtaking them. Sometimes, too, the motorist's horn is inaudible in the cab of the truck.

General adoption of a device recently invented by a German scientist, however, not only would tell the truck driver when a motorist wants to pass, but would enable him to signal the motorist whether an attempt to pass would be safe.

A report to the Commerce Department from its Berlin office, describing the invention, says it operates on accoustic principles, "picking up" the sound of an approaching automobile's horn from 100 yards or more away, and bringing it to the attention of the truck driver by causing a light on his instrument board to flash.

When he sees the flash, the man in the cab may flick a finger switch telling the driver what possibilities for passing the road ahead presents. If it appears safe, a blue light will show from the rear of the truck; if cars are approaching from the opposite direction, if there is a sharp turn in the road, or if some other reason prompts him to believe an attempt at passing would be unsafe, the truck driver turns the switch the other way, and a red light flashes from the truck's rear end.

After the danger has passed, he may turn on the blue light, giving the motorist a "go" signal to pull around the truck and be on his way in safety.

Navy Contracts for Fuel Oil Awarded for the Coming Year

N. P. N. News Bureau

WASHINGTON, June 28.—Sinclair Refining Co. was awarded contracts on 12 of the 31 items included in the Navy Department's schedule for fuel oil supplies for the coming fiscal year, a canvass of the bids and awards reveals.

Other successful bidders included Shell Union Oil Co., six contracts; Colonial Beacon Oil Co., five contracts; Standard Oil Co. of New Jersey, three; and Cities Service Oil Co., Tidewater Associated Oil Co., Warner-Quinlan Co., Belcher Oil Co., Miami, Fla., and Burns Bros., New York, one each.

Navy fuel oil is made to the U.S. Navy's own specifications and falls between Commercial Grades 4 and 5.

A tabulation of awards, with prices per barrel, with quantities estimated, follows:

New London, Conn.: 40,000 barrels navy fuel oil*, Shell Union Oil Co., $1.965 delivered to Naval storage tanks; $1.17 f.o.b. Gulf ports.

Washington, D. C.: 1250 barrels navy fuel oil, Sinclair Refining Co., $2.245 f.o.b. Washington Navy yard.

Boston, Mass.: 10,000 barrels navy fuel oil, Colonial Beacon Oil Co., $1.57 delivered f.o.b. Navy vessels at tanks of supplier.

Boston, Mass.: 2500 barrels navy fuel oil, in lots of 250 to 500 barrels, Colonial Beacon Oil Co., $1.81 delivered in supplier's barge f.o.b. Government stations or f.a.s. vessels lying within harbor limits.

Boston, Mass.: 7500 barrels navy fuel oil, in lots 501 to 1000 barrels, Colonial Beacon Oil Co., $1.69 delivered same as above.

Boston, Mass.: 12,500 barrels navy fuel oil, in lots 101 barrels or over, Colonial Beacon Oil Co., $1.63 delivered same as above. (Present prices, quoted by bidder on four above Boston bids, subject to change as Miranda crude 21° gravity, as posted by Humble Oil Co. is increased or decreased above or below 93 cents per barrel.)

Boston, Mass.: 17,500 barrels Bunker "C" fuel oil, Cities Service Oil Co., $1.65 (maximum) delivered in supplier's barges f.o.b. the Army Depot in lots of about 1500 barrels.

Port of New York: 60,000 barrels navy fuel oil, Shell Union Oil Co., $1.85 delivered f.o.b. vessels; $1.17 f.o.b. Gulf ports.

Port of New York: 10,000 barrels navy fuel oil, in lots of 250 to 500 barrels, Shell Union Oil Co., $1.975 delivered in supplier's barge f.o.b. government stations or vessels in harbor limits; $1.17 f.o.b. Gulf ports.

Port of New York: 25,000 barrels navy fuel oil, in lots 501 to 1000 barrels, Shell Union Oil Co., $1.955 delivered same as above; $1.17 f.o.b. Gulf ports.

Port of New York: 12,500 barrels navy fuel oil in lots of 1001 to 5000 barrels, Sinclair Refining Co., $1.75 delivered as above (plus 5 cents per barrel barging charge).

Port of New York: 12,500 barrels navy fuel oil in lots of 5001 barrels or over, Sinclair Refining Co., $1.75 delivered as above (plus 5 cents per barrel barging charge).

Port of New York: 120,000 barrels Bunker "C" fuel oil, Sinclair Refining Co., $1.55 delivered f.o.b. vessels in harbor.

Port of New York: 2500 barrels Bunker "C" fuel oil, in lots 250 to 500 barrels, Sinclair Refining Co., $1.55 delivered f.o.b. government stations or f.a.s. vessels lying within harbor limits (plus 5 cents per barrel barging charge).

Port of New York: 5000 barrels Bunker "C" fuel oil, in lots 501 to 1000 barrels, same bidder and prices as above.

Port of New York: 7500 barrels Bunker "C" fuel oil, in lots 1001 to 5000 barrels, same bidder and prices as above.

Port of New York: 10,000 barrels Bunker "C" fuel oil, in lots 5000 barrels or over, same bidder and prices as above.

Port of New York: 3000 barrels Bunker "C" fuel oil, Sinclair Refining Co., $1.55 delivered in supplier's barges at Naval hospital, Brooklyn, (plus 5 cents per barrel barging charge.)

New London, Conn.: 2000 barrels Diesel oil, Tidewater Associated Oil Co., $2.65 (maximum) delivered f.o.b. vessels at New London tanks of supplier.

Miami, Fla.: 6000 barrels Diesel oil, Belcher Oil Co., Miami, $2.73, delivered f.o.b. vessels at tanks of supplier.

Boston, Mass.: 2000 barrels Diesel oil, Burns Brothers, New York City, $3.15 delivered in tank wagons at Navy Yard, Boston, and pumped into tanks of vessels.

New Bedford, Mass.: 1000 barrels Diesel oil, Shell Union Oil Co., $3.57 (maximum) delivered f.o.b. vessels at tanks of supplier.

Portsmouth, New Hampshire: 7000 barrels Diesel oil, Colonial Beacon Oil Co., $2.56 spot, $2.98 maximum, delivered in supplier's tank cars f.o.b. Portsmouth Navy Yard.

Port of New York: 3600 barrels Diesel oil, Standard of New Jersey, market price date of delivery, $2.90 guaranteed maximum, delivered f.o.b. vessels at supplier's tanks.

Port of New York: 4000 barrels Diesel oil, Warner-Quinlan, $2.75, delivered f.o.b. vessels at tanks of supplier on East River.

Port of New York: 1000 barrels Diesel oil, in lots 250 to 500 barrels, Sinclair, $2.20 delivered to vessels in harbor limits, (plus 6.5 cents barging charge).

Port of New York: 4000 barrels Diesel oil in lots 501 barrels or over, same prices and bidder as above.

Wilmington, N. C.: 700 barrels Diesel oil, Shell Union, $2.60 maximum, delivered f.o.b. vessels at tanks of supplier.

Philadelphia, Pa.: 150 barrels Diesel oil, Sinclair, $2.94, delivered in tank wagons to Philadelphia Navy Yard.

Port of Hampton Roads, Va.: 500 barrels Diesel oil, Standard of New Jersey, market price date of delivery with guaranteed maximum of $2.90, delivered to vessels within harbor limits.

Port of Hampton Roads, Va.: 1000 barrels Diesel oil, Standard of New Jersey, market price date of delivery with guaranteed maximum of $2.75, delivered same as above.

25 Technical Questions on Agenda For July 9 Meeting of W.P.R.A.

SHREVEPORT, La., June 28.—The July technical meeting of the Louisiana - Arkansas - East Texas division of the Western Petroleum Refiners Assn. will be devoted to the answering and discussion of 25 questions that have been dropped in the "question box" the past few months. The meeting will be held at the Washington - Youree Hotel, Shreveport, Friday afternoon, July 9.

Following is a list of questions to be answered and discussed:

Technical Questions

1. Can the octane number be so high on a gasoline that the automobile engine will not operate as efficiently as on a lower octane number gasoline?

2. Are cetene number and octane number the same?

3. Has any of the group experimented to any extent with cupperic chloride treatment, either wet or dry, on their various products which need sweetening?

4. Is fractionating under pressure (say up to 300 lbs.) considered advantageous?

5. In the operation of your refinery or field absorption plant to what gasoline content do you strip your gas and how is this content determined?

6. In the operation of your refinery or field absorption plant to what gasoline content do you strip your lean oil and how is this content determined?

7. What has been the experience of the refiners in this area as to the best method of stabilizing the color of kerosine produced from East Texas crude?

8. Will treat-o-lite in a stream kill fish?

9. What do you consider the most important test of a lubricating oil?

10. How about some discussion on lubricating the hypoid axles in the new model automobiles?

11. What experience have refiners in this group had removing rust and scale from steel tanks?

12. What are considered the most effective gum inhibitors?

13. Would like to know whether anyone in this group or vicinity have a small pilot cracking plant which could probably be used in place at expense of user for an experimental run.

14. Has anyone had any experience with the effect of too much sulfur in doctor sweetening on the amount of lead required to blend to 70 octane number?

15. What is the highest gravity East Texas crude oil found?

16. When the B.S.&W. on fuel oil from a cracking coil separator runs 1.5 per cent and the same fuel loaded in tank cars runs 2.5 per cent, what can be done to remedy this?

17. What is the minimum amount of excess air that can be used in a cracking coil furnace?

18. Is any information available in this group on results of reforming: Heavy naphtha and/or kerosine from Rodessa crude, either on plant or lab scale? Yields? Octane number obtained, treating required, etc.?

19. What method is being used by refiners in this group for the removal of coke from cracking still tube headers?

20. Do any of the plants maintain an inspector at the shops where refinery equipment is being fabricated for their own use? Is such thought to be advisable?

21. What are the relative merits of castor oil as compared with mineral oil for lubrication? How does cost compare?

22. What experience have refiners in this group had with corrosion of vapor lines and headers topping East Texas crude?

23. Has any one had trouble with the corrosion of vapor lines and/or headers topping East Texas crude?

24. Has any conclusive evidence been given to prove the superiority of a solvent refined oil over a straight refined oil?

25. What is your experience concerning corrosion property of lubricating oil?

Mich. Conservation Bill Dies In Committee

(By Telegraph)

SAGINAW, Mich., June 29.—The Michigan legislature adjourned June 26, leaving the oil conservation bill dead in a senate committee. It had passed the house and was thought to have a good chance if it had been reported out to the senate. The bill was drawn more than a year ago and had the support of a large majority of Michigan producers.

The only conservation measure which was passed at this session was the one affecting dry gas fields, providing ratable taking and limiting withdrawal so as to prevent quick and wasteful depletion of reserves.

No Need Exists For U. S. Control, Oil Scouts Told

DALLAS, Texas, June 28.—Plans for the proposed affiliation of the National Oil Scouts Assn. with the American Petroleum Institute have been left up to the executive committee of the scouts' association and to William R. Boyd, Jr., executive vice-president of the institute for final determination.

This affiliation was proposed at the business session of the scouts organization, held during the annual convention in Dallas June 25 and 26. Boyd had conferred with a number of the scouts and leaders in the organization during the two-day convention but, with members of the scouts' association not fully agreed upon the plan of affiliation, the matter finally was passed on to the executive committee.

The scouts also authorized the employment of a full time executive secretary to work particularly on the organization's yearbook, which has been consuming more and more time of members who work without compensation. The secretary also will handle much of the business of the association.

Howard Boyd, chief scout for the Magnolia Petroleum Co., Dallas, was elected president of the scouts' association. He succeeds Claude A. Strahan, of Shreveport, scout for Atlantic Refining Co. Boyd had been secretary-treasurer of the organization for two years.

"There is no need to snap the whip of federal control over this industry," Boyd stated, in the course of his address before the oil scouts June 25.

"It is only natural," he continued in the government control part of his address, "that the petroleum industry should make earnest and practical efforts to insure conservation of the product upon which its industrial life depends. Those who say this industry is not conservation-minded, or is intentionally profligate with the nation's oil reserves, know not whereof they speak. The industry is committed to conservation if for no other reason than that of self-preservation.

"I know there may be those who will contend that, because petroleum resources are believed to be depleting reserves, this industry must be subjected to federal regulation and control bordering upon governmental operation. I fear that all too frequently this attitude stems from motives far removed from conservation of the nation's resources. These repeated suggestions that the federal government ride rough shod over the rights of the states, the industry, and the citizens smack of bureaucracy, if not of autocracy; of political expediency, not public welfare."

Boyd spoke briefly on the rapidly increasing tax load of the oil industry. "The industry is instrumental in directing to government treasuries each year more than 11 per cent of all revenues collected. The industry, itself a substantial contributor, also acts as the unpaid collector of gasoline taxes which cost the motoring public nearly one billion dollars a year," he said.

Other officers elected were Harry Leyendecker, Houston, chief scout for Tide Water Associated Oil Co., first vice-president, after serving the past year as chairman of the executive committee; Ed Neath, Houston, Humble Oil & Refining Co., second vice-president; Lonnie Huddleston, Wichita Falls, Texas, Shell Petroleum Corp., secretary-treasurer, and Lee A. Adams, Oklahoma City, Sinclair Prairie Oil Co., chairman of the executive committee.

The executive committee will select the next convention city at a later date but a "straw vote" among members indicated Tulsa was the popular choice.

Ben Nash, Houston Oil Co., and dean of oil scouts, was given a life membership in the organization. He has been in the work for 20 years.

The sessions were not all business, however, as is evidenced by the fact that, in one of the less serious moments of the convention, Ralph Steinman, Tulsa, Sinclair Prairie, was voted the best dressed scout attending. Bill Washburn, Shreveport, Shell Petroleum Co., was voted the baldest, and J. W. Selby, Houston, Shell Petroleum Co., was given the honor of being the most expert user of cut plug.

The technical program included discussion of water flow location by means of photoelectric surveys, by E. F. Stratton of Houston; water flooding, by K. B. Nowels, Abilene, and directional drilling, by James D. Hughes, Dallas.

U. S. Backing Up States Charges

(*Continued from page* 17)

fined oil or distillate. These distributors sold, through their own retail stations or to other retail dealers, the gasoline on which they had paid no tax but on which they collected the tax from customers. Some of this tax money found its way to certain state tax officials who either were direct parties to the conspiracy or whose diligence was dulled by favors from the distributors; some went to the refiners and brokers who shipped the material, and the remainder was kept by the distributors.

While some of the parties to the conspiracy apparently were very careful to have all Interstate Commerce Commission regulations with regard to inflammables complied with, even though the commodity was billed as "refined oil" or kerosine, the Federal Bureau of Investigations is understood to have found some instances in which the regulations were violated, and that evidence is expected to play an important part before the grand jury.

Some of the witnesses waiting to testify are tax collectors and inspectors in the states in which the violations are alleged to have occured. It takes no mind reader to ascertain that these officials are provoked that some of the participants in the racket escaped punishment in state courts. They are glad, they say, that the federal government has taken a hand in the matter, and they believe that, through that procedure, all those involved will be punished.

A few of the guilty ones, it was pointed out, escaped punishment in the state courts by becoming state witnesses. Others escaped through having appeared as witnesses in a legislative investigation, the committee having failed to obtain waivers of immunity before the witnesses appeared before it.

Record Is Evidence

But all the evidence gathered by various methods in the states is a matter of public record and the federal grand jury accordingly can act on that evidence, it was said, without having to promise immunity to anyone for his testimony.

Despite that fact, however, a few of the defendants named in the complaints were reported hanging around the district attorney's office this week seeking an opportune time to try to trade what they knew about the racket for immunity from federal court justice. What the Federal Bureau of Investigation obtained in the way of evidence, and what the grand jury will hear from the witnesses when they appear before it, is not known. However, some important general facts have been made known by officials who have been working on the case.

In some instances, it was learned, the inspectors have "caught up" with the persons who were attempting to evade the tax. The evader when caught, paid the tax the inspector said was due. That act, it was said, is in effect a confession of guilt—and the federal grand jury undoubtedly will have that evidence before it. There are a few others who, after learning they would not be punished in state courts, confessed to their part in the racket. Those confessions are now expected to be a part of the government's mass of evidence.

Impatiently Waiting

It is no wonder, therefore, that reports were heard late in the week that a few of those named in the charges were just waiting around until the indictments were returned by the federal grand jury, so they could go before the district judge and plead guilty and get the whole thing over with as quickly as possible.

The only refiners in the Shreveport area so far known to be involved in the federal charges are those formerly connected with the now inactive Griswold Refining Co. It is believed generally here, however, that the Federal Bureau of Investigations, already has or will shortly turn its attention to the East Texas refining area. It will be recalled that one former employe of an East Texas refining company still is a fugitive from justice, with the state of Tennessee offering a reward for his capture and return to that state.

It also is believed that the investigations bureau is not through with its investigation involving those already named and possibly others in other southeastern states. The investigators had to work fast, it was said, because the statute of limitations would prevent prosecution unless the evidence was ready for the present grand jury.

Tank Car Buyers Named

Most of those named in the complaints, other than refiners, are said to be tank car buyers in Louisiana, Tennessee, Mississippi, Alabama and Florida. Many of them are officials and employes of one company. The two Florida individuals, for example, are officials of one company. Several of those named as living in Mississippi are officials and employes of one company.

State tax officials in the five states are known to have co-operated with the bureau of investigations and the railroads in tracing the numerous shipments involved. The majority of the 231 cars of gasoline that have been traced, it was indicated, had moved into Mississippi and Tennessee. A portion of the gasoline "misbilled" and distributed in Louisiana, it was indicated, had been handled by truck.

Still Uncertain On Tideland Law

N. P. N. News Bureau

LOS ANGELES, June 26

For lease, 11 parcels of 160 acres in the Huntington Beach tidelands to the bidder offering the highest royalty in excess of 30 per cent, which is the minimum to be accepted for any well producing more than 200 barrels a day.

Such a notice has not gone out, but the California finance department took steps the past week preparatory to advertising for bids on leases in this southern California field under the Olson tideland development bill, which was approved by the Governor several weeks ago.

The state's chief executive still has before him, in the pile of several hundred legislature-approved bills on his desk, the two alternate tideland development measures which would offer other solutions to the problem. If not signed by midnight July 2, these and other proposals die a natural death via the pocket veto.

Senator Olson, in support of his measure, has asked the governor to hold a public hearing on relative merits of the competitive issues if he seriously considers signing the O'Donnell bill, one of the alternate proposals.

The question has been raised in legislative circles whether the O'Donnell bill would take precedence over the Olson measure, if approved by the governor. This measure would become effective, when signed, 90 days after ratification by the legislature, which would make August 27 the operative date.

If the Olson bill is not nullified by either of the alternate propositions, bids made under its provisions to the finance department would be opened Sept. 10. Some observers point to the possibility that a referendum might hold up operations under any of these bills. This strategy has proved an effective block to other laws which have received legislative approval in this state.

Opposition was expressed the past week to plans by the City of Long Beach to impose high drilling fees and levy a production tax on oil development in an extension of the Wilmington field lying within the city limits.

The California Oil and Gas Assn.'s ordinance committee registered vigorous objections to a $750 drilling fee and to a one cent per barrel production tax. On June 21 the Long Beach harbor commissioners adopted an ordinance limiting derricks in the harbor district to steel and setting up the $750 permit fee. They also recommended that the city council levy the one-cent production tax. Proceeds were to be used for additional harbor expense resulting from oil development.

A dispute between the commission and the council, as to jurisdiction in the harbor district drilling, was declared to have been ironed out. The council adopted a resolution that permits to drill be granted by spot zoning on the basis of one well to an acre; that the zoning ordinance which prohibits oil drilling in the harbor area should not be repealed or amended; that acreages should include property to the middle of streets and that streets could be "jumped" providing the lots within a lease are continguous; and that the state law should be made a part of the regulatory ordinance when it is adopted by the city fathers.

Oil Trucking Gains

WASHINGTON, June 28.—Movement of petroleum and products by truck in May reflected a 42.62 per cent increase over the corresponding month last year, according to the monthly survey of truck loadings compiled by American Trucking Associations.

Movement of all commodities by truck gained 17.95 per cent in May, compared with May 1936, A. T. A. reported. A small decline was noted in movement by truck in May as compared to April, however, the decline for all commodities being 3.21 per cent and for petroleum and products 0.85 per cent.

BARTLESVILLE, Okla., June 28. — H. L. Montgomery has resigned as president and member of the board of the American Pipeline Co., a Cities Service subsidiary. He has been connected with utility interests since 1905, when he joined the old Denver Gas & Electric Co. staff.

DAILY AVERAGE PRODUCTION IMPORTANT DISTRICTS
American Petroleum Inst. Figures

	Week Ended June 26	Week Ended June 19
	Barrels	Barrels
Oklahoma City	147,100	142,950
Total Okla. ..	632,050	632,200
East Texas ..	465,500	464,950
Total Texas..	1,409,450	1,396,400
Rodessa	49,000	48,550
Total La.	260,700	253,400
California ...	654,400	658,400
East of Rockies	2,875,200	2,852,550
Total U. S. ...	3,529,600	3,510,950
Crude Imports	117,140	83,430
Tot. new sp'ly	3,646,740	3,594,380

Texas Allowable Higher For July

N. P. N. News Bureau

TULSA, June 28.—The regulatory bodies of both Oklahoma and Texas late last week announced crude oil production allowables for July, with Oklahoma staying with the U. S. Bureau of Mines' recommendation and Texas going above that body's estimate of market demand by some 10,300 barrels daily.

The Texas Railroad Commission's order, issued June 24, set allowable production on July 1 at 1,385,476 barrels daily. This is an increase of 35,214 barrels over the basic allowable for June, and 10,376 barrels more than the Bureau of Mines recommended. The allowable production on June 17, however, was 1,407,652 barrels daily, having increased normally from the June 1 figure, due to well completions.

The factor on which the East Texas field's allowable is based was left unchanged at 2.32 per cent of the average hourly per well production. This was calculated to permit production on July 1 of 466,000 barrels daily, as compared with 462,000 barrels on June 1.

"Saves the Day"

Commissioner Ernest O. Thompson was en route home from Europe and there had been some speculation as to the other two Texas Railroad Commissioners, Chairman C. V. Terrell and Lon A. Smith reaching an agreement before Thompson returned. Smith took occasion to tell the press, however, that the producers "can thank me for making this order possible. I know the storage tanks all over Texas are about empty and I realize what would happen if the state went two or three days without an order. The wells would be opened wide and the tanks would be filled."

The Oklahoma proration order fixed the allowable at 629,700 barrels daily, which is 4400 barrels above the June allowable.

Barrelage recommendations worked out at recent meetings of operators and Conservation Officer W. J. Armstrong, of the Oklahoma Corporation Commission, were approved with these percentages set for pools:

Class A — Oklahoma City (Wilcox) 12 per cent; Class B —Keokuk Falls, 11; Lucien, 10.75; all others, capacity flow; Class C—Billings-Wilcox, 7.5 and Jesse 7, and both transferred to B group; North Bethel, 9; South Britton, 5; Crecent, 2; Edmond, 2.4; Fitts-Hunton, 3.75; Fitts — Upper Simpson, 6.3; Fitts-Wilcox, 5.1; Langston, 13.5; North Lucien, 12.5; Moore, not available; East Sasakwa-Wilcox, 12, and North Wellston, 20.

New potentials orders also were signed, with Oklahoma City Wilcox zone wells to be declined at a rate of 5 per cent a month with a maximum decline of 20 per cent, with the period beginning July 1.

E. Texas Plant Reopens

GLADEWATER, Texas, June 28.—The General American Oil Co.'s refinery here, shut down for several months, is being reconditioned and is expected to be reopened by July 1. The plant is expected to begin operating at the rate of 3500 barrels daily, although its capacity is rated at 5000 barrels daily.

LOS ANGELES, June 26. — D. D. Durr, southern California advertising manager of the Associated Division of Tide Water Associated Oil Co., has been made general chairman of the Pacific Advertising Clubs Assn.'s annual convention, which will be held in Los Angeles in June, 1938.

MILWAUKEE, June 28.—Van B. Hooper, advertising manager of the Louis Allis Co., has been elected president of the Milwaukee Ass'n. of Industrial Advertisers. Hooper succeeds E. J. Goes of the Koehring Co. The Milwauke association has members from industrial advertisers in all parts of the state.

Plants Running Wilmington Oil

N. P. N. News Bureau

LOS ANGELES, June 26

One result of the flush production of oil from the Wilmington field for which no major purchaser has seen fit to set a price or lay a gathering line, is the reopening of several small refineries which have been shut down a year or longer.

Ring Oil Co., an independent producing company, has taken a long term lease on the old Shepherd and Pendleton plant in Seal Beach, which it says will handle 4000 barrels of Wilmington heavy crude per day. The company expects to make gasoline, gas oil and fuel oil and said it had contracted with independent distributors to handle the motor fuel output.

Negotiations were also re-

ported under way for the White Star Refining Co.'s plant at Hynes, which has been off stream for nearly three years.

Petrol Corp. has taken over operation of the Fletcher Oil Co.'s 3500-barrel plant, which is across the street from its own 8500-barrel unit on Bandini Blvd., Los Angeles, and will use the two plants to process some 10,000 barrels of Wilmington crude, in addition to its regular supply. The Fletcher plant has been inactive for more than a year.

Another development in the Wilmington picture the past week was an announcement by Edington Oil and Refining Co., independent, that it would post prices for oil in that field. The company offered to buy such oil under contract, at its posted prices, as it had facilities to handle.

The posted prices were offered on oil cutting less than three per cent m. and b.s. and less than one per cent sand. For heavy, high sulfur oil produced from wells on the west side of a fault, 55 cents was offered for 17 to 18.9 gravity crude and 60 cents for 19 to 20.9 gravity.

Production from wells on the east side of the fault would bring 60 cents for 17 to 18.9 gravity; 65 cents for 19 to 20.9, and 70 cents for 21 to 22.9 gravity.

The company said it would increase purchases in the field as fast as it could increase its facilities to handle oil. Its prices were declared to be approximately 10 cents per barrel higher than the present spot market and the company said these prices would be increased as fast as outlets could be provided at higher prices for its products.

1,147,000-Barrel Decrease in Motor Fuel Stocks, A. P. I. Reports

N. P. N. News Bureau

NEW YORK, June 29.—With a three-day midsummer holiday week-end approaching, motor fuel stocks were lowered 1,147,000 barrels during the week ended June 26, to 72,017,000 barrels, according to the American Petroleum Institute. Last year, for the corresponding period, stocks showed a decrease of 773,000 barrels. Last year total stocks were 63,709,000 barrels.

Crude runs to refinery stills were also lowered by 85,000 barrels daily to 2,974,000 barrels daily average. All but two districts cut their runs and in these two the increases were slight. A 26,000-barrel decrease at East Coast plants, a 27,000-barrel decrease at Texas Gulf Coast plant and one of 20,000 barrels in California, accounted chiefly for the reduction for the entire country.

Motor fuel stocks in the Texas Gulf district were lowered 688,000 barrels. Other larger decreases were 258,000 barrels in Oklahoma-Kansas-Missouri; 221,000 barrels in the Louisiana Gulf and 197,000 barrels in Indiana-Illinois-Kentucky. Stocks at East Coast plants increased 165,000 barrels and at California plants 184,000 barrels.

Motor fuel stocks at refineries moved down 1,060,000 barrels to 42,011,000 barrels the past week. Stocks in-transit and in terminals declined 8000 barrels, to 23,078,000 barrels and unfinished gasoline stocks declined 79,000 barrels, to 6,928,000 barrels.

Operating capacity of reporting plants declined 2.3 per cent, to 82 per cent the past week.

Mid-Cont. Bright Stock Inventories Reduced

TULSA, June 28.—Curtailed production and increased demand during May resulted in a 14,636-barrel reduction in bright stock inventory at plants operated by 13 Mid-Continent refiners reporting operations to Western Petroleum Refiners Ass'n. Export shipments showed the most substantial increase, rising 8311 barrels above shipments the previous month. Export demand in May, however, fell far short of the 63,840-barrel high mark for 1937, chalked up in March. Domestic shipments increased 2851 barrels in May.

Despite a 14,336-barrel reduction in production of viscous neutrals, stocks of this oil increased 16,358 barrels in May. However, this represented only a three-day increase in supply on hand, based on current demand.

Stocks of paraffin oil and blended oils increased in May, while inventory of steam refined stock was reduced. The association's figures are as follows:

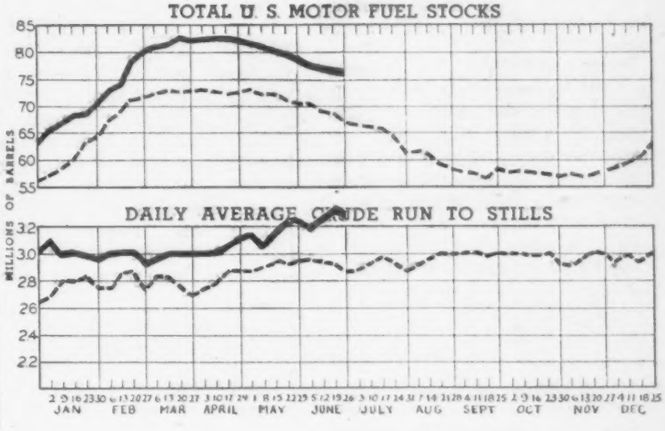
	May, 1937	April, 1937
Bright Stock	(Figures in barrels)	
Production	157,742	164,400
Shipments:		
Domestic	135,146	132,295
Export	37,232	28,921
TOTAL	172,378	161,216
Inventory	291,077	305,713
Days Supply	60	64
Viscous Neutrals		
Production	191,832	206,168
Shipments:		
Domestic	167,425	216,008
Export	8,059	7,255
TOTAL	175,474	223,263
Inventory	228,320	211,962
Days Supply	42	39

Oil Movies at Expo

HOUSTON, June 28.—Daily motion pictures showing all phases of petroleum operations, including methods used in foreign fields, will be featured at the Oil-World Exposition, in Houston, Oct. 11 to 16.

Among the films to be shown are "Through Oil Fields of Mexico," made in co-operation with the American Oil Co. (Pan American Petroleum & Transport Co.); "Refining the Crude," Gulf Refining Co.; and "Petroleum, the Liquid Mineral," The Pure Oil Co. All of these films have been made by the U. S. Bureau of Mines in co-operation with the companies mentioned.

Other technical films will be exhibited, all in the projection room of the new exposition building.



CURRENT REFINERY OPERATIONS

Districts	Per Cent Capacity Reporting	Daily Average Crude to Stills (Barrels) Week Ended		Per Cent of Reporting Capacity Operated Week Ended		Stocks Thousands of Barrels: Total Finished and Unfinished Motor Fuel*		Stocks Thousands of Barrels: Total Finished Gas & Fuel Oil		Gas & Fuel Oil % Total Capacity Reporting	'Cracked Gasoline Production Daily Av. Production (Barrels) Week Ended	
		June 26	June 19	June 26	June 19	June 26	June 19	June 26	June 19		June 26	June 19
East Coast	100.0	540,000	669,000	80.7	84.6	19,018	18,853	8,416	8,069	100.0	119,000	125,000
Appalachian	88.4	110,000	129,000	85.3	89.1	2,952	2,939	734	707	94.6	28,000	26,000
Ind., Ill., Ky.	92.1	446,000	467,000	95.5	97.4	13,238	13,435	5,719	5,556	98.5	138,000	140,000
Okla., Kans., Mo.	84.6	296,000	380,000	77.9	77.4	8,057	8,315	3,174	31.60	90.3	69,000	67,000
Inland Texas	56.6	157,000	201,000	78.1	75.6	1,939	2,005	1,761	1,734	71.7	31,000	35,000
Texas Gulf	95.5	664,000	757,000	87.7	91.3	8,915	9,603	7,263	7,103	98.0	139,000	158,000
La. Gulf	96.3	135,000	158,000	88.0	88.6	1,434	1,655	2,316	2,131	100.0	29,000	31,000
No. La., Ark.	63.7	41,000	53,000	70.7	75.9	470	452	389	386	77.5	8,000	6,000
Rocky Mt.	69.7	39,000	62,000	62.9	64.5	1,907	2,004	753	747	85.4	10,000	11,000
California	90.9	542,000	716,000	72.7	75.3	14,087	13,903	67,700	67,452	98.0	63,000	65,000
Total Reporting	88.8	2,974,000	3,627,000	82.0	84.3	72,017	73,164	98,225	97,045	94.8	634,000	664,000
Estimated U. S. Total (Bur. of Mines Basis)		3,235,000	4,084,000			75,427	76,571	100,395	99,215		700,000	730,000

*Includes stocks at refineries, in bulk terminals, pipe lines and in transit.

Texas Refinery Starts Operating

MOUNT PLEASANT, Texas, June 28.—Talco Asphalt & Refining Co. June 24 began operating its 5200-barrel daily refinery on a straight-run basis. Cracking equipment will be ready to run later.

The company is owned by Capt. J. F. Lucey, D. Harold Byrd, Jack Frost and Ralph E. Fair, all independent producers, Dallas. They own an important part of the Talco field, in Franklin and Titus counties, northwest of the East Texas field. An 18-mile pipeline carries oil to the refinery.

The plant is modern in design and was built at a cost of more than $1,000,000. Universal Oil Products Co., Chicago, supervised the construction. Dubbs cracking equipment is being installed.

Talco crude is heavy, around 25° A.P.I. gravity. Management of the new plant said that tests show it to have more than 40 per cent asphalt content and asphalt products of all grades are being made, in addition to straight-run naphtha, kerosine and gas oils. With the completion of cracking equipment, unleaded gasoline of 70 octane will be offered to the trade, according to E. E. Jackson, sales manager.

J. K. Mackinnon is general manager of the company; C. O. Garbrecht, superintendent; John Dom, chief chemist; James Reed, office manager and Joe Dranguet, office manager. Operating offices are at Mount Pleasant.

Barge Line Surveys Savannah River

By Teletype
N. P. N. News Bureau

WASHINGTON, June 29.—Major General T. Q. Ashburn, president of the Inland Waterways Corp., has instructed his engineers to make a survey of the Savannah river, from Savannah to Augusta, Ga., with a view to starting operations of the corporation's government-owned barge line as soon as possible on this river, the traffic on which now is practically all petroleum products.

Gen. Ashburn said he would have several towboats available for service on the stream as soon as the survey is completed. The corporation has no oil barges, but its towboats on other streams where it now operates—chiefly the Mississippi and its tributaries—tow a heavy traffic in petroleum products.

Oil companies barging up the river from the seaport terminals need only furnish the barges—the Waterways corporation will provide towing service under a law approved June 19, authorizing the extension of Ashburn's operations to the Savannah river.

General Ashburn took part in the formal dedication June 26 of the new $2,000,000 locks and dam in the river just below Augusts, which also are expected to increase traffic.

Kansas Official Resigns

WICHITA, Kan., June 28.—A. W. Logan, for the past four years director of the inspection and registration office for Kansas, will resign on July 1. As director Logan had charge of gasoline tax collections and the operation of the state's ports of entry. His successor will be J. L. Grimes, of Salina, Kans., formerly with the United Power & Light Co. at that city.

KANKAKEE, Ill., June 28.—Baron-Huot Oil Co. is building a bulk plant at Aurora, Ill., with five 18,000 gallon tanks. The company formerly operated out of Aurora from a leased plant.

Trucking Safety Rules Are Ready

By Teletype
N. P. N. News Bureau

WASHINGTON, June 29.—Tentative safety regulations covering the transportation of explosives and other dangerous articles (including gasoline and other inflammable liquids) by contract and private motor carriers will soon be issued by the Interstate Commerce Commission, for distribution to carriers and shippers, it was learned today.

The regulations are to be issued under an exparte proceeding undertaken by the commission under authority of the motor carrier act and an act governing the transportation of explosives. The proceeding also will cover proposed modifications of similar rules already in effect for common carriers by truck.

No safety regulations applying to contract and private truckers of explosives and inflammables have been issued by the ICC since the motor carrier act became effective, except those sections of the general safety regulations applying to them—which are few.

Hearings will be held on the proposed new regulations for contract and private carriers, as well as the modification of common carrier safety regulation, after interested parties have had opportunity to study them.

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Oil Cuts Its Marketing Costs

With New Transportation Methods

THE above photographs, taken by a NATIONAL PETROLEUM NEWS staff writer, on a 3000-mile trip through the Southeast preparing material for this Transportation Number, are typical of what is going on in many sections of the country.

This Citizen's Oil Co., an independent marketing company, with headquarters at Columbus, Ga., owns the marine terminal shown in the picturesque setting of moss-draped trees, on the St. Marks River at Newport, Fla. Cecil Clark, who operates the company, brings his supplies in his own 5000-barrel steel barge, all the way from New Orleans and Mobile. The other photograph shows one of his transport trucks leaving the marine terminal for a 250-mile haul to serve his marketing territory.

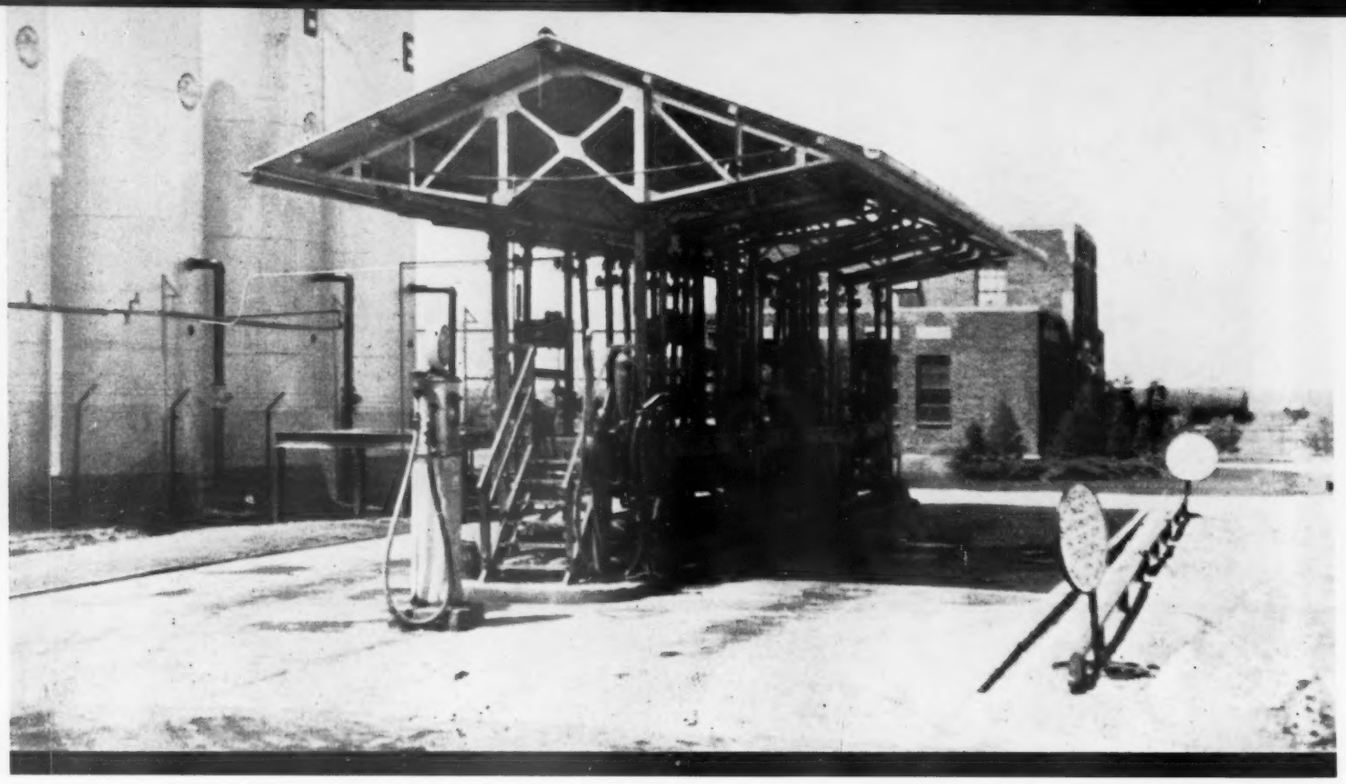
This is not a lone example, but is typical of what many independent oil companies over the country are doing in the use of marine transportation, combined with long distance trucking, to bring petroleum products to the public at lower costs. By the roadside, on the banks of the Basin Bayou, in Florida, this same staff writer found another independent jobber building, with his own crew of welders, a 4000-barrel barge to send to Texas for his gasoline. The story of what this enterprising independent is doing is told on following pages in this issue.

Another N.P.N. staff writer, in preparing an article for this issue, spent two weeks in Nebraska studying the amazing growth there of the long-distance trucking of gasoline from Mid-Continent refineries. The figures are almost unbelievable but they are set forth in all detail in a featured article in following pages. They show that 80 per cent of marketers in that state receive some of their supplies by transport trucking. Of all gasoline shipped into Nebraska in 1936, over a third came in by long distance trucking, over a half of its kerosine and about 40 per cent of its distillate.

Data studied by another staff writer show that by 1934, the last year for which figures are available, from the railroads' own figures, over 25 per cent of all the gasoline consumed in the country moved by long distance trucking and the revenue in that year from trucking that gasoline was over $66,000,000, as compared with a revenue of $172,500,000 to the railroads for moving gasoline.

Much of this gasoline moved by transport trucking was hauled by regular trucking companies; but N.P.N. writers were greatly impressed with the extent to which the oil companies themselves are engaged in this trucking service, some of them branching out to haul petroleum supplies for neighboring oil companies and stations, as well as their own.

Other special articles in this Transportation Number of N.P.N. described the new and important features of trucking equipment now available for this long distance hauling of oil products; the regulatory features of such trucking operations to which oil companies must conform; present data on the extensions of our inland waterways system and the building of new terminals from which the trucking of oil products is carried on—presenting all told a rounded out picture of this new and striking development in the oil industry.



A loading dock at a Kansas refinery, open 24 hours to fill transports. On the busiest day 350,000 gallons were loaded. About eight minutes are required to load a 2500-gallon trailer and, on a 6390-gallon job hauling to Denver, the transport was cleared and loaded in 11½ minutes. Truckers pull up to the dock, get a card from a state inspector indicating the equipment is satisfactory for loading, have the compartments filled, get clearance papers from the state official, and start rolling the load back home

80% of Nebraska's Marketers Use Long Distance Trucking

By **E. L. BARRINGER**
N. P. N. Staff Writer

• • •

LINCOLN, Nebr. THIRTY-SIX per cent of all the gasoline, and 61 per cent of all the kerosine, that entered Nebraska last year was brought in by long distance trucking.

Such is the magnitude, in this state, of the truck transportation of petroleum, inaugurated only seven years ago. These percentages assume additional significance, as total imports include figures of some of the larger marketing companies that continue to receive shipments by rail, either direct from the refinery or in intrastate movement from the gasoline pipeline terminal in Omaha. Of 852 importers of gasoline into Nebraska, 80 per cent receive truck shipments.

Nebraska, directly above Kansas, has been a natural market for Kansas refiners. This geographic location, along with the practice of the railroads in routing tank cars out of Kansas into Kansas City, then northward into Omaha and fanwise into Nebraska, laid the framework for trucks to establish a new transportation system moving products more directly from the refinery to the jobber.

Nebraska may be the proving ground for long distance truck transportation in the middle west, especially in view of developments of marine and pipeline terminals. Already much of the gasoline consumed in Kansas moves by truck in intrastate commerce. Denver on the west is served by trucks, and gasoline from Kansas is moving eastward by truck into central Iowa and Missouri. Observant marketers keep in mind developments of the Mississippi and Missouri river waterways, pipelines and location of refineries, and are looking into the future with the possibility of bulk movement to strategic terminals, then truck movement to wholesale and even retail outlets.

Many developments in the petroleum industry are internal, known only within the industry; but transportation by truck has become well known to the traveling public in Nebraska. The traveler on east-west highways in Nebraska meets transports frequently but the number increases rapidly as the traveler takes to the north-south highways leading to the Kansas border. Bulk of this transport traffic converges on U. S. highways 77, in the eastern part of Nebraska and on 81, the next through highway to the west. On these highways there is a steady stream of transports, going to Kansas light or returning with a load. Seldom is a mile traveled without meeting one transport, frequently three will be seen within a quarter of a mile. In Kansas the truck stream increases again, with intrastate trucking along with transports moving interstate into Colorado, Iowa and Missouri.

Influence of the truck transport on petroleum marketing now extends beyond the lone feature of transportation. The bulk of Nebraska's transporters are oil men, many of them hauling for other jobbers as contract carriers, and part of their business enterprises now consists of transporting. Among the remainder of the transporters are many who found a new livelihood after the decline of transporting livestock to Omaha markets by truck.

TRUCK transportation also has brought changes in the requirements of working stocks in marketing, and in capital invested in merchandise. The flexibility of truck transportation has resulted in a detour of the bulk plant's delivery to retail outlets, a direct haul from refinery to service station in many instances.

While statistics paint an imposing scene of the importance of long distance trucking of petroleum products in Nebraska, and the impression of transports being big business may be gained from the numerous trucks seen on the high-

ways, yet not all oil men are favorably inclined towards truck transportation. Main point of opposition, from oil men, is the change brought in the market structure.

The service station operator can virtually receive gasoline direct from a refinery as readily as a bulk plant, hence a tankwagon price to resellers based on a markup of the cost of gasoline laid down at the bulk plant has about disappeared in Nebraska. To put it another way, the jobbing function of marketing, in some instances, can be eliminated by truck transportation. Also, when a low cost station, with several pumps and tanks, competes against a more elaborate station in the sale of gasoline, the cost of the merchandise laid down may be about the same for both outlets.

Oil Transportation Takes To Highway

The reason for truck transportation of oil products, in its infancy, is laid at the door of high railroad freight rates. Other advantages of truck transportation are given now—lower inventory, less capital invested in merchandise, direct delivery from refinery to retail outlet, and quicker delivery of products—but these advantages are claimed to have been discovered as trucking developed. Ask a jobber transporter why he started trucking and invariably the first reason given will be "lower freight costs." Popular credit for being the first trucker is given to a jobber in south-central Nebraska, in 1930.

The background of this freight rate situation that led to truck transportation includes keeping in mind the geographic relation of Kansas and Nebraska, and the direction of flow of railroad traffic. In Nebraska and Kansas, as well as other midwestern states, the bulk of traffic flows east and west. These are the directions of main railroad lines, with branch lines running north and south. Each state also has a railroad center on the eastern boundary through which traffic filters, Omaha for Nebraska and Kansas City for Kansas.

In Kansas several main railroad lines converge into Kansas City. In Nebraska two railroads cross the state out of Omaha. The Union Pacific cuts across the state along the Platte river. The Burlington swings down from Omaha into Lincoln and continues with two lines. One branch continues southwestward into a corner of Kansas, on the route to Denver. The other branch swings northwest into Alliance, Neb., and on to Wyoming and Montana.

The statement that Nebraska is the natural market in interstate commerce for Kansas refiners might infer, through looking at a map, that products would move directly northward to market. Such is not the case on account of the major east-west movement of railroad traffic, with Omaha as the railhead for Nebraska and Kansas City for Kansas.

For shipments into Nebraska, Kansas is in two freight zones. Group 1 rates are for Kansas City refiners. Group 2 is for refiners in the remainder of the state. Rates from these groups, for Nebraska shipment, are based (1925 rail rate case) on movement of products on a U-shaped course, from the refinery to Kansas City, then northward into Omaha, and then fanwise westward into Nebraska. Oklahoma refiners, for Nebraska shipment, are in Group 3.

The rates offer a differential to Kansas refiners, about .23-cent a gallon, but, for practical considerations, Nebraska jobbers could be said to buy on a Group 3 basis, with Kansas refiners absorbing the differential.

In view of the round-about movement of railroad traffic, coupled with the rate situation, truck transportation is viewed as a logical development. The truck, by moving directly from the jobber's point of operation to the refinery, eliminated many miles of travel and shortened the time for receiving supplies, once the product was loaded at the refinery.

Railroads were made aware of the situation in the early days of truck transportation by jobbers who, at that time, had not availed themselves of truck deliveries. Conferences were held with railroad officials, in which jobbers predicted lower rates would be necessary to hold business for the rails. The railroad executives did not meet the situation, however, and by last year they had lost 35 per cent of the gasoline and 61 per cent of the kerosine traffic in Nebraska.

The seeking of lower freight costs may be the first cause of truck transportation, but in the early stages of developments several other factors deserve a hearing. These are the relatively high taxes in Nebraska, and, strangely enough, livestock transportation.

TRANSPORTATION of livestock and petroleum might seem to have little in common in Nebraska, yet they did. Years back, trucking livestock from the farm to the Omaha stockyard was a large and profitable business. Farmers in the main were content to produce the livestock and let transporters take it to market. Then came the drought years and, with dwindling feed supplies, farmers were forced to deplete their stock. Along with drought came depression and the farmer and his sons turning to new fields of occupation naturally augmented the number of truckers. So, with fewer cattle to truck to Omaha and more truckers in the field, the old line transporter moved on and found the field of petroleum transporting just opening.

Herman Ells, Hebron, transporter license number 49, is one of the ex-cattle transporters who turned to oil transporting and oil marketing. Talk with Herman for two minutes and he is bound to

A transport of Martin Oil Co., Kansas City, tank capacity 6400 gallons

The wholesale and retail station of Kleinholz Oil Co., in Friend, Neb. Kleinholz is one of the oldest transporters in the business, a former and present oil jobber, and with three outfits last year transported over 2,500,000 gallons of kerosine, gasoline and distillate. Retail sales are made on the drives in front of the station. Wholesale business is done at the building at the left of the station

mention his five boys, proud that he had enterprise enough to keep himself and the five boys off relief.

Herman hauled cattle to the Omaha stockyard but, when drought cleaned off the cattle, he turned to oil transporting. First he hauled for a jobber, and then he set up his own oil business. At present he operates a station in Hebron, selling to the public and with a dock price for sales to a tank wagon peddler who serves farmers. Herman is a native of York, and he plans to develop his oil marketing operations there with a bulk plant to deliver to the farm trade and a service station. Meanwhile Herman will continue truck transportation, and in the past eight years he has purchased 73 trucks.

High gasoline taxes played a part in bringing trucks on the transportation scene. Going back a decade, Nebraska and Kansas had a 2-cent tax rate in 1927 and 1928. In 1929 Kansas advanced the rate to 3 cents. In the same year Nebraska advanced its tax rate to 4 cents. Kansas has retained the 3-cent rate through the years but Nebraska now has worked its rate to 5 cents. And remember the "first trucker" is popularly credited to a city within the proverbial stone's throw of Kansas, and the year was 1930, the year following Nebraska's doubling its tax rate.

Now a tax is a tax, with a fixed rate but the quantity brought into a state subject to the tax can be variable. And that is what truck transportation has done in Nebraska. An 8000-gallon tank car and a 4-cent tax rate obligates the jobber to $320 in taxes. A 2000-gallon truck transport and a 4-cent tax rate obligates the jobber to only $80 in taxes. The truck transport enables the jobber to turn his merchandise more often and operate on a smaller inventory and capital.

Increase in the number and volume of truck transportation has a similarity to a snowball gathering size as it rolls down hill. One jobber in a community begins trucking. Then a competitor catches the idea and adds one more customer for the truck transporter. As the transporter's business grows he is unable to take care of all the demands for his equipment. So a jobber who received supplies by a contract transporter buys his own transports. To keep the equipment rolling, the new jobber-transporter seeks contract hauling jobs. And so it went—the more jobbers receiving supplies by trucks the more transporters came into the field, and the more transporters in the field the larger the number of jobbers supplied by trucks.

A case in point, and also an illustration of the new type of oil marketer as a result of truck transportation, is the Penn Continent Co., Lincoln. About four years ago this oil company entered the business with several stations in Lincoln. Supplies were received by truck transport for about nine months. Then came a difference with the transporter over hauling to a commercial consumer account direct and the attitude of the transporter resulted in Penn Continent buying an outfit to do its own hauling.

For three years now Penn Continent has been doing its own hauling, serving direct, by transport, two stations in Lincoln, one with 1500 gallons the other with 5000 gallons storage, and a commercial account. Products are transported also for several other jobbers.

Since the first transport rumbled over Nebraska's highways some seven years ago, trucking of petroleum products has reached the proportions of "big business." A survey of transports by C. M. Sutherland & Sons, Lincoln, operating a special service organization for petroleum transporters, depicts the size of this transportation method in Nebraska as of Jan. 1, 1937, in these figures:

Number of tractors used by transporters, 557.

Number of transporters, 284. As of March this figure was 289.

Total investment in transportation equipment, $1,685,482.

From these figures, it is apparent that, while the number of individual transporters is large, the number of units operated per transporter is small. Such is the case. The survey showed that the largest number of outfits operated by one transporter was nine, some had five to seven, and the average for the state was 1.9 outfits per transporter. The average investment per outfit was $3026.

Petroleum transporters in other sections of the country may operate larger fleets, but Nebraska ranks right at the top as to the number of individual transporters. Also, the distances that petroleum products are transported into Nebraska are tremendous. A haul of 1000 miles is not cause for a Nebraska transporter to raise his eyebrows in surprise.

Distances in the central states are large. A journey of several hundred miles can be made quickly, as there are few towns of size, but even then the traveler has not cut away much mileage in crossing a state. The shortest hauls in intrastate transporting in Nebraska would be from the only truck loading point within the state, the Champlin Refining Co., pipeline terminal in Superior. Champlin, an Oklahoma refiner, completed the pipeline in 1935, and first deliveries from the plant were in September.

Interstate truck shipments originate in Kansas. The shortest haul to the Nebraska-Kansas state line would be from Kansas City, 98 miles one way. The longest haul would be from Coffeyville on the extreme south border of Kansas, 254 miles one way, and from Arkansas City, 250 miles one way.

When the transporter reaches the state line loaded there still may be many miles to travel within Nebraska. McCook, an important point in southwestern Nebraska, is 171 miles, one way, from the nearest port of entry. Scottsbluff, in the central western section, is 422 miles, one way. A handbook on the mileages compiled by the Sutherland organization lists Harrison as the farthest point, 502 miles one way. And the mileage given in this paragraph is only the distance within Nebraska, to which must be added the distance from the Nebraska-Kansas state line to the refinery loading dock in Kansas.

While Nebraska has a multitude of petroleum transporters, yet there are many marketing companies in the state to take advantage of this method of transportation. The relation of truck transportation and the number of marketers is evident from the Sutherland survey figures, by comparing the number of licensed gasoline importers in Nebraska with the number of marketers receiving all or part of their supplies by truck:

January	Total number of importers	Importers receiving all or part truck deliveries
1935	803	466
1936	856	601
1937	852	687

In considering truck transportation, the question invariably arises of how much volume an outfit must haul during the year to be profitable. Back of this question is the point of the size of marketing operations in Nebraska. The 852 figure, as of January, 1937, represents the total number of marketers licensed by the state to import gasoline for tax collection purposes and a marketer, regardless of annual volume, shows up as one unit in arriving at this figure.

The annual statistical survey compiled by the Sutherland organization shows that, in 1936, 15 marketers imported 96,351,000 gallons of the state's total imports of 229,556,000 gallons of taxable gasoline, or about 42 per cent. That leaves 133,204,000 gallons imported by the remaining 837 marketers, or an average of about 150,000 gallons a year per importer.

Other statistics show that more than 50 per cent of the marketers handle 100,000 gallons or less of gasoline a year. It is estimated that a jobber in Nebraska handles about one gallon of kerosine, tractor fuel and distillate for every three gallons of gasoline. Thus, on a general aver-

age, the importer of 100,000 gallons of gasoline a year would have an estimated total volume, aside from lubricants, of about 133,000 gallons a year.

The significance of the large number of small marketing companies is in matching these figures against opinions of experienced truck transporters as to the minimum volume necessary for profitable operation. This minimum is set from 250,000 gallons upwards as the annual volume per outfit. Some would venture the opinion that even 250,000 gallons annually was a rather low figure.

One jobber, operating one outfit, is of the opinion that 27 or 28 trips per month are a minimum. Keeping in mind the highway distances, a transport's speedometer rolls up mileage quite fast making that many trips. This jobber-transporter hauled 617,000 gallons of gasoline, kerosine and distillate last year, for his own outlets and for other jobbers.

Other transport operators express a minimum figure in terms of volume, and place this at 350,000 to 500,000 gallons a year. Some truck operating expenses are fixed, regardless of volume or number of trips, while others are variable but, obviously, the larger the volume the lower the cost per gallon. In view of the many marketers with small annual volume of their own business, the reason for oil jobber-transporters seeking transport business from other jobbers is explained.

Any opinion on minimum annual volume, of course, is tempered with distance and freight rates. A transporter in western Nebraska could not make as many trips during the year as a transporter operating in the eastern part of the state. On the other hand the western Nebraska operator is working against a higher freight rate in compensating for the longer haul.

While truck transportation now is regulated by the Interstate Commerce Commission, through the federal motor carrier act, yet many of the early local problems had already been solved. These include rates, safety regulations, and setting up state ports of entry.

Since truck transportation had its inception in seeking of lower freight rates, the rate has been an important consideration. In earlier years there was considerable instability in rates as the truck transportation industry was shaping itself, and possibly through adequate knowledge of truck operating costs. Jobbers still relate stories of rates from 1 to 1.5 cents a gallon under the railroad rate to their point of operations.

The general truck rate now is about 92 per cent of the rail rate but, under the federal motor carrier act, rates are still in the process of being published. The Sutherland organization endeavored to publish an agency rate, preserving the basic railroad groups, but the Interstate Commerce Commission has asked for individual publication of rates. Under the agency method the transporter delegates power of attorney to an agency, which publishes the rate.

Under the federal carrier act, aside from a transporter hauling for his own marketing business, the transporter has a choice of classifying as a contract or common carrier. The difference, as far as rates are concerned, is that the common carrier must adhere to the rate published, the contract carrier works under a minimum rate. The common carrier must accept business from anyone, in the territory being served, at the published rate. The contract carrier works under a contract, and his published rate is a minimum.

In the railroad rate grouping all refiners in a given area, regardless of exact location of the plant, have the same rate to a given destination. Difference in plant location has a more direct effect in transportation by truck. Thus, a contract carrier could publish a rate from all Kansas refineries to specific points of delivery in Nebraska. This would be a minimum rate. On a contract to haul from a nearby Kansas refinery this rate might apply, whereas on a haul from a Kansas refinery farther from the Nebraska-Kansas line the transporter could ask a higher rate to compensate for the longer haul.

While rail traffic enters the state at Omaha, truck traffic enters along the southern state line at various ports of entry, so the transporter, in considering rates, finds railroad rates vary as the transport moves east or west on entering Nebraska. The Group 3 rail rate to Omaha, for example, is 2.24 cents a gallon, to Red Cloud, Neb., 2.64 cents.

As most truck traffic enters Nebraska on highway U. S. 81, movement eastward towards Lincoln and Omaha runs into a decreasing railroad rate. Yet, moving west of highway 81, railroad rates advance progressively farther west. A transport with a destination northwest of Omaha runs into a higher rate the greater the distance from Omaha.

With truck transportation rates near those of railroads there arises the natural question of why transport by truck, especially if the oil marketer is not a transporter benefiting from profits of truck operations. The answer is in the other advantages of truck delivery—smaller investment in merchandise with a quicker turn-over, smaller liability per load on state gasoline taxes, and less evaporation loss.

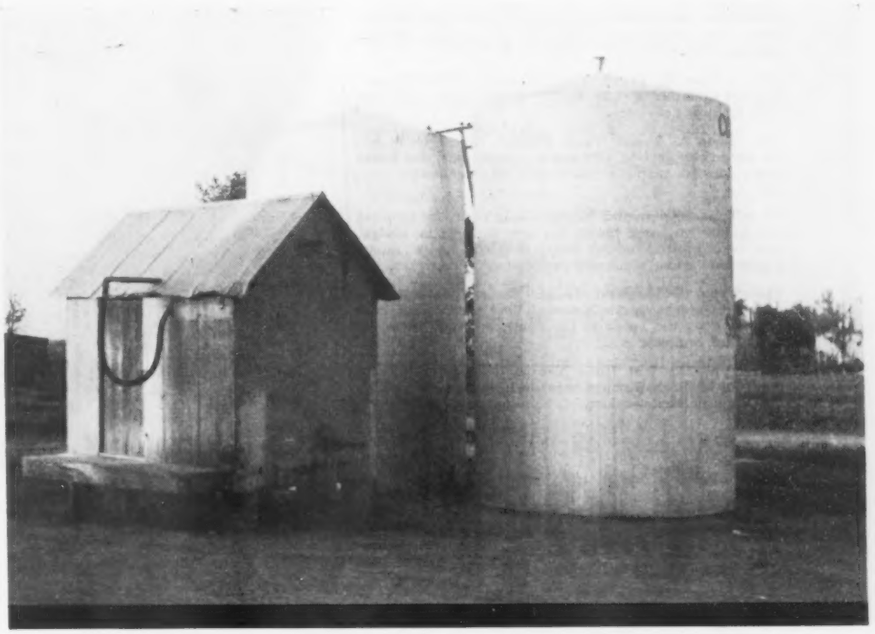
Regulation of safety in truck transportation is through state laws and through insurance company supervision of risks. Kansas has complete regulation on trucks, as to construction, quality of tanks, equipment on the tanks, and on the loading and unloading of inflammable liquids, as published in a booklet by its department of inspections and registration.

Safety supervision by insurance companies does not duplicate efforts of the state, but is more concerned with actual operation of the truck on the highways and safety devices to aid the driver. One company, for example, has an engineer browsing over the highways to check up on trucks. Trucks are checked on whether stops are made at railroad crossings and the transporter is notified of any negligence of his drivers. This company now is campaigning for rear vision mirrors on both sides of the cab, the mirror on the right side to prevent the driver from crowding when passing a vehicle on the left.

One of the latest forms of state regulation is the port of entry system. On interstate traffic trucks have to stop at ports operated by Kansas and by Nebraska. Ports have been established at towns near borders along main traveled highways and trucks must clear on entering and leaving the states. The ports are usually in a room of a highway service station, so drivers usually make an extended stop, to clear and to eat and have any necessary repairs made on trucks.

When entering Kansas, trucks clear through the port, filling in an application giving a description of the equipment, route through the state and final destination. The transporter checks in with a state official at the loading rack and clears again on leaving the state. On entering Nebraska the transporter reports in and pays a 50-cent fee.

Ports of entry have been established by



Truck transportation has produced this new type of storage in Nebraska, the tank farm of Corner's Service, at Blue Hill. The two 12,000 gallon tanks are the original bulk plant, converted now to receive delivery by transport instead of rail. One 3000-gallon trailer job operates from a refinery in Kansas to fill this and another plant. Four 2200-gallon jobs are operated delivering from these plants to jobbers

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2 — Type 214 Elbow
4 — Type 31 Truck Tank Faucet
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Transport Inshipments of Petroleum Products Into Nebraska, for 1935 and 1936, Compared with Total Inshipments
(From Statistical Survey of Inshipments, Compiled by C. M. Sutherland & Sons, Lincoln, Nebr.)
(Gallons)

	1935		1936	
	Truck Transport	All Methods	Truck Transport	All Methods
Gasoline	63,089,098	221,211,190	82,164,491	230,388,251
Kerosine	12,049,144	25,472,051	16,484,587	27,164,646
Distillate	17,256,676	64,299,358	29,781,011	78,114,542

both states for different purposes. Kansas ports are to provide a check on truck movements within the state to insure collection of the ton mile tax. Nebraska ports are to provide a check on inshipments of products for collection of the gasoline tax from the importer.

Maximum loads are hedged by Nebraska's law of 32,000 pounds gross weight, and popular tank capacities are between 2100 to 3000 gallons for gasoline. Among transporters there is considerable difference of opinion as to the capacity of equipment best suited to economical hauling. One transporter, for example, operates a certain type tractor to haul a 3000-gallon gasoline load. Another transporter, operating the same type of tractor, is of the opinion that 2100 gallons is the most economical load.

C. H. Kleinholz, Friend, one of the oldest transporters, continues to operate light tractors and the three outfits carry the following gasoline loads, 2495, 2556, and 2576 gallons. Corner's Service, Blue Hill, operates five light tractors. One tractor is in service, with a 3000-gallon trailer, moving products from Kansas to the company's bulk plants in Blue Hill. Four tractors, each with a 2200-gallon trailer, moves products from the bulk plants on ultimate delivery to other jobbers.

TRAILERS usually carry the load in three compartments, each with an unloading line to the side of the outfit. Side outlets are favored for ease in reaching storage tanks, and for safety in preventing lines from being sheared off in case the trailer is struck from the rear. One transporter has a fourth compartment, 100-gallons capacity, on the front of the trailer for the tractor's gasoline supply tank.

While trailers are operated indefinitely, one transporter has a trailer with nearly 1,000,000 miles of service, tractors usually undergo major repairs at stated intervals and are traded by experienced operators after 100,000 to 200,000 miles of service.

One transporter makes a practice of replacing piston rings every 25,000 miles. At the 50,000, 100,000 and 150,000-mile intervals motors are replaced, and at 200,000 miles the tractors are traded. Another transporter, also with an accurate cost record, has found it practical to replace motors as required, and to trade at 100,000 to 125,000 miles.

Truck transportation has increased business for highway garages, as transporters without benefit of a car sales and service garage agency usually buy repair service on the highways as needed. Continuous operation is necessary for profitable truck transportation, so major repair work is anticipated and the better grade highway garages get this business.

One transporter, with seven outfits, has investigated maintaining a company garage and believes it less expensive to use highway garages. A completely equipped shop, with several mechanics always on duty, would be required, the transporter found. At times such a garage would be idle, then there would be peak demands. An extra outfit also would be needed to replace a laid-up outfit. The transporter has found commercial garages more economical, with work assigned to a garage when possible at the end of a run, and with needed highway repairs at the nearest garage known to give good service.

Assignment of drivers to the same equipment has been found to be a factor in anticipating repairs. One transporter had the experience of drivers, when assigned to various outfits, not reporting operating troubles. Since schedules have been arranged to keep two drivers on the same outfit, repairs are anticipated each trip. The driver knows that he goes out on the same outfit each time, so instead of letting the next driver catch any grief on the road, he reports in time to have work done between shifts.

In the arrangement of operating schedules three methods are used. One is to keep the transport moving between the loading dock and unloading destination with the same crew. Another is to have a relay point, one crew picking up a load and the other making the delivery. The third method is to truck directly to a tank farm, then load other transports in making deliveries to jobbers' plants or to stations.

Typical of relay point operating is the schedule arrangement of one of the largest transporters, hauling mainly for the company's own marketing properties. This transporter has designated a town in central-south Nebraska as the relay point, on which all transports converge for dispatching to loading docks and to delivery destinations.

A truck returning from a delivery, light, is dispatched from the relay point to the loading dock in Kansas. A driver is assigned to the truck, to pick up the load and return the truck to the relay point. One set of drivers is constantly on duty driving between the Kansas refinery loading docks and the relay point in Nebraska.

When a truck returns loaded to the relay point the dispatcher assigns a driver to take the truck to its unloading destination, and to return light to the relay point. Thus another set of drivers handles transports in making deliveries in Nebraska from the relay point. Each transport is dispatched, loaded, out of the relay point with the first driver taking the longest trip. On one trip a driver draws a short haul, on the next trip a long haul.

The tank farm method of handling transport loads is followed so far by only a few oil men. Most of the transporting is a direct haul from the refinery to unloading destination, or through relays of drivers. In both these methods the product remains in the trailer and there is only one handling after the transport is loaded, and that to the bulk plant or service station tanks. The operating method concerns only management of the hours of the drivers. With tank farms the products are unloaded from the transport making the trip from the refinery and reloaded to the transport making the ultimate delivery.

One of the tank farms is operated by the Hill Oil Co., at Superior, Neb., just over the state line. The farm has 12 above ground tanks, on the highway just north of town. A sign on the warehouse back of the service station at the plant advertises "A pint or a truck load." Another tank farm is operated by Corner's Service, at Blue Hill, Neb., near the central part of the state.

Corner's Service was an oil jobber, prior to truck transportation, with two 12,000-gallon, above ground storage tanks along a railroad in Blue Hill. This plant is still in operation, to store gasoline transported from the refinery, and the former tank car unloading pumps empty truck compartments into storage. The jobber now has another bulk plant in Blue Hill, with three tanks above ground for storage of kerosine, tractor fuel and distillate. The plant is on a hillside, so transports may be unloaded by gravity to storage. On the lower level transports making the second delivery may be loaded by gravity also.

Five outfits are operating in and out of these two bulk storage plants. One is a 3000-gallon job, in constant service between the refinery loading dock in Kansas and the plant. In case the 3000-gallon trailer cannot transport a sufficient volume, one of the other trucks is temporarily assigned to the refinery run. Four 2200-gallon trailers are on duty transporting from the two bulk plants to final delivery destinations. The longest haul from the plant is 600 miles, round trip.

THE advantage claimed by the jobber for the tank farm method of handling transports is in speedier delivery to customers. With one truck constantly on the refinery run there is always a working stock in the plants. When a jobber calls in for a load, instead of dispatching a transport to the refinery the order is filled from the plants. An order received at night is filled the next day, by removing products from the bulk plants.

Ten years ago marketers in larger cities were much concerned about trackside service stations. In Nebraska marketers are equally concerned with the highway-side bulk plant-service stations. This is one of the two notable contributions of truck transportation in changing marketing operations. The other notable change is making location of the bulk plant flexible, taking the location from the railroad right of way to the highway.

In general operating principle the trackside station and the highwayside bulk plant-station have much in common. The trackside station pulled the service station to the bulk plant. The highway-side set-up brings the bulk plant to the station. In both instances there is only one handling of products, in transportation between the refinery and the ultimate consumer.

The trackside station has limitations as to the number of locations. A railroad

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siding along a street, preferably a well traveled street, was necessary. The highwayside station is practically without limitations as to locations. Transports can deliver to virtually any location. Instead of matching a site to a railroad, the highwayside station matches the location to probable volume.

Limitations on highwayside stations are those imposed by laws governing the capacity of storage. Maximum underground storage in Nebraska is reported to be 1500 gallons. While this size storage is not sufficient for a full transport load, a compartment or two can be dumped, with the remainder of the load delivered to another station. And additional tanks can be installed. One jobber-transporter has two stations, with 5000 gallons storage at one and only 1500 gallons at the other. Both stations are in the same city, so the transport fills the tanks at the smaller capacity station and takes the balance of the load to the other station.

Direct delivery from transport to station storage has not as yet altered station storage equipment. Marketers are of the opinion that, on new installations, or changes in equipment, where truck transportation is involved there will be a tendency to install storage up to the maximum allowed by law and to install 2 or 3-inch fill lines. At present, connections are made with a reducer on station tank fill pipes which are smaller than the customary 2-inch unloading lines on transports.

CHANGES in location of bulk plants have been made possible, as transports are operating over highways and are not concerned with railroad lines. Consequently plants have been located with respect to the consuming territory being served rather than to desirable sites along a railroad right-of-way. It has been estimated that about 33 per cent of the bulk plants of jobbers receiving shipments by truck have been located along highways.

Highway sites for bulk plants and direct delivery by transport to service stations, has led to the merger of some bulk plants with service stations. Bulk plant tanks are back of the station, in some cases across the highway and transports unload into this storage. A short pipeline moves products from bulk to station storage tanks.

With wholesale and retail operations concentrated at one point the dock price situation has bobbed into the marketing picture. Wholesale marketing is conducted through a separate pump at the side of the station, or through a retail pump at the station's drive. And two prices are posted. One is the retail price, the other is the dock price at which products will be delivered from the equipment into the farmer's containers.

Statistics on the number of transporters and the volume moved, along with the number of transports seen on highways, might lead to the impression that motor transports have been accepted and recognized as a part of the modern oil products transportation system. Such is not the case, however. Truck transportation has its opponents. These include refiners, jobbers and, of course, the railroads.

Some jobbers have hesitated to receive deliveries by truck as their bulk plants are on railroad property. Other jobbers have compromised the situation, leaving their plants on railroad property and, while receiving products by truck, ordering out an occasional tank car to give the railroads some business. Other jobbers have been independent enough to turn a deaf ear to the railroad's story of continuing tank car shipments because the bulk plant is on railroad property.

"The railroad didn't like our using truck transportation," commented one jobber, "but I told them just to say the word and I'd move the plant. But they still come around every year for their $10 rent."

Refiners divide on truck transportation into those who fill transports, and those who do not. Those who fill transports divide into those who accept this method of transportation generally and those who fill transports only to retain their jobber business. Just as one jobber using truck transportation causes competing jobbers to use the same transportation method, so one refiner filling transports causes competitors to consider this form of transportation.

Jobber opposition to truck transportation is based on claims of disrupting the retail market structure, and the creating of additional competition. Some jobbers are quite bitter in their denunciation of truck transportation.

Direct hauling from refinery to service station storage tanks by-passes the bulk plant and tankwagon delivery, and also the tankwagon price structure. The dealer getting direct deliveries works on a cost price which is the same as the jobber's cost laid down in the bulk plant. Jobbers opposed to truck transportation point to this evil, claiming that the tankwagon price has been wiped out and that the tankwagon price to dealers through trucks is the refinery price plus delivery costs, rather than the jobber's laid down price plus the jobber margin. In other words, the dealer served by truck delivery works on the same price basis as the jobber's bulk plant.

The other jobber complaint is that the transport creates competition of new oil marketing companies, and a type that gets into the oil marketing business with a minimum of investment. The dealer, through transport delivery, operates on a low cost price and can get into the wholesale market, as well as disrupt retail prices, through posting a dock price and filling the buyer's containers. On the retail side of a jobber's business, there is the dealer getting into the business with a small investment in equipment and station, selling gasoline and some motor oil at his own price and offering little in the way of service, getting tax paid gasoline from a transporter with an importer's license. Against this competition the jobber and established dealer gives service and operates from a more costly place of business.

Lower transportation cost remains the chief advantage of truck transportation, but additional advantages are listed by marketers from experience gained through this form of transportation. These are lower inventory, quicker turnover of stock, less tax liability, quicker delivery, and less evaporation loss.

To the marketer operating a very small gasoline business the rate of turn-over of stock is said to be about three times as great through truck transports as with tank car shipments. The marketer has less capital tied up in merchandise on the transport delivery and has a smaller inventory to convert into cash before ordering another load.

THE state gasoline tax liability also presents a problem to the marketer operating on a small volume of business. With Nebraska's 5-cent state rate, the marketer on every tank car received assumes a tax bill of $400. On a transport delivery of 2500 gallons the tax is only $125. With a small inventory at the end of the month, the marketer's sales are nearly equal to receipts, on which the state tax is based; so there is comparatively little gasoline in storage on which the tax is paid before it is sold.

Testimony of jobbers at hearings under the federal motor carrier act showed that railroad shipments arrived two or three days after orders were placed, and in some cases more time was required. Transport deliveries generally are received in 24 to 36 hours after placing of orders, excepting for the more distant hauls in the far western part of the state. The longest haul of one jobber-transporter is 825 miles, round trip. On this haul orders received one morning are delivered the next afternoon. On shorter hauls orders received in the morning are frequently delivered by the next morning.

Less evaporation loss is claimed also where truck transportation of gasoline is used. Marketers point to the shorter time the gasoline is in transit between the refinery and unloading destination as being a factor in keeping down this loss and to its storage in underground tanks resulting in elimination of the loss that comes in above-ground storage under Nebraska's beating sun during summer months. One jobber-transporter, prior to transporting, figured his evaporation loss at .25 cent a gallon. Since transporting by truck, he claims this loss is eliminated entirely.

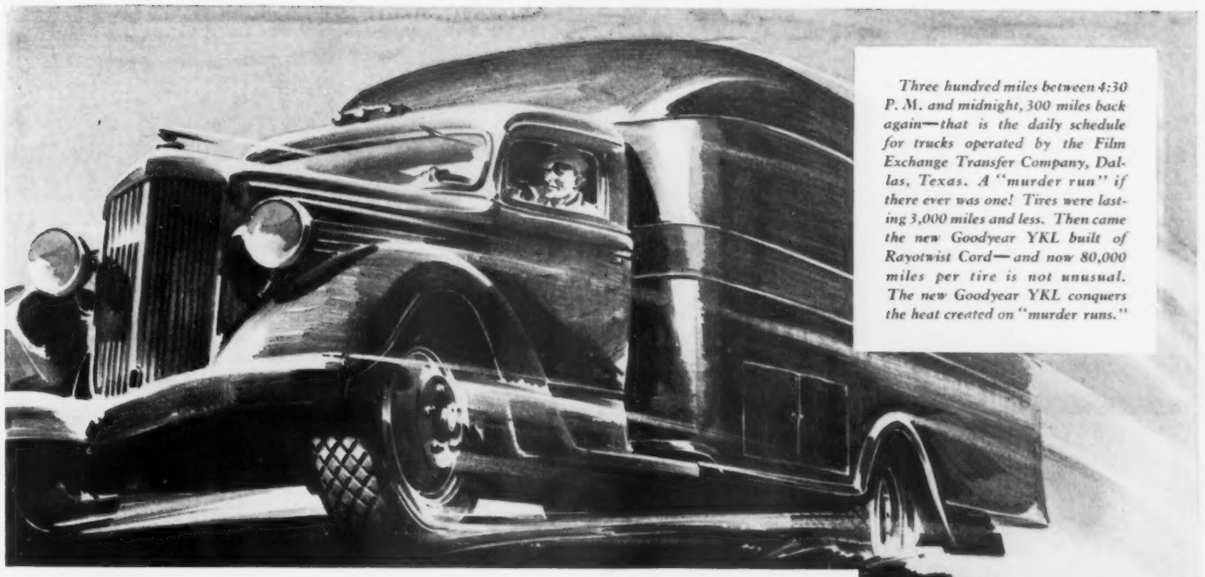
In addition to all these advantages claimed for truck transportation of petroleum products is the factor that transporters with accurate records report that transporting is a profitable business in itself.

Nebraska Transporters

Following is an analysis of the number of truck transporters of petroleum products operating in Nebraska, based on the volume of gasoline, kerosine and distillate delivered, taken from the 1936 Statistical Survey of Inshipments, compiled by C. M. Sutherland & Sons, Lincoln, Nebr.

Total transported, in gallons, gasoline, kerosine, distillate, during 1936	Number
Under 50,000	33*
50,000 to 100,000	18
100,000 to 200,000	33
200,000 to 300,000	33
300,000 to 400,000	39
400,000 to 500,000	31
500,000 to 600,000	23
600,000 to 700,000	12
700,000 to 800,000	8
800,000 to 900,000	7
900,000 to 1,000,000	7
1,000,000 to 1,250,000	6
1,250,000 to 1,500,000	6
1,500,000 to 1,750,000	3
1,750,000 to 2,000,000	3
2,000,000 to 2,500,000	3
Over 2,500,000	3

*Includes transporters operating less than full year.



Three hundred miles between 4:30 P. M. and midnight, 300 miles back again—that is the daily schedule for trucks operated by the Film Exchange Transfer Company, Dallas, Texas. A "murder run" if there ever was one! Tires were lasting 3,000 miles and less. Then came the new Goodyear YKL built of Rayotwist Cord—and now 80,000 miles per tire is not unusual. The new Goodyear YKL conquers the heat created on "murder runs."

BUT WHY TALK "MURDER RUNS" TO ME?...

I TRUCK OIL IN TRENTON

That's a fair enough question.

The chances are 99 to 1 that you never do give your tires the beating they'd get on a "murder run."

Even so—news of this great new super tire, the Goodyear YKL, *is* important to you. Goodyear engineers spent seven years developing the new YKL to meet an urgent need for such a tire.

And these same engineers have developed another tire just as scientifically fitted to your requirements as the YKL is suited to the "murder runs."

It is the Goodyear All-Weather Balloon, a tire which—for service less severe than the "murder runs"—will give you more miles of trouble-free service per dollar than any other tire produced.

It has the famous *All-Weather Tread* for greater traction, less skidding—*Supertwist Cord,* blowout protection in every ply—*Extra-Strong Bead Construction* for heavy, swaying loads—*High Profile Tread Shape* for better traction, cooler running—*Heat-Resisting Rubber* for long, even wear, greater strength.

So whether it's the YKL or the All-Weather Balloon—

Put Goodyears—the right Goodyears—on ANY job and watch your mileage jump!

CAUTION!

The new YKL Tire is recommended only for the most destructive types of service—for the "murder runs" over long distances at sustained high speeds. In ordinary trucking, its extraordinary capacities cannot be fully utilized—and, frankly, its higher price cannot be justified.

THE GOODYEAR TIRE & RUBBER COMPANY, INC., AKRON, OHIO

THERE'S A GOODYEAR BATTERY *now!*

GOODYEAR TRUCK TIRES

The tank ship Colony shown at the left has been plying the inland waterways along the coast of North Carolina almost since the waterway's opening to traffic five years ago. Drawing seven feet of water, she carries 27,000 gallons, and was built especially for Coastal Oil Co., Newbern, N. C., an independent jobbing company owned by J. H. Parker

Combined Barging–Trucking Serves Independents of Southeast

By **A. M. PETTY**
N. P. N. Staff Writer

• • •

THE linking of long-distance trucking with tanker and barge operations in the southeast has developed as efficient and diversified a transportation system for petroleum products as can be found anywhere in the United States.

Opening up of new waterways and the switch from the railroads to barges and transport trucks for hauls of several hundred miles has considerably altered the oil marketing picture in this section and promises to work much greater changes as projected waterway improvements are completed.

A large part of the annual 1,700,000,000-gallon gasoline consumption in the six southeastern states—more than half in some of them—never sees the inside of a railroad tank car from refinery to filling station pump.

The southeast, embracing Virginia, North and South Carolina, Georgia, Florida and Alabama, is gifted with many deepwater harbors on both the Atlantic and Gulf of Mexico. All its principal seaports are situated at the mouths of rivers which finger inland for several hundred miles.

Some of these, it is true, are snag-filled and shallow, but they are suitable for barge movement most of the year. The government is spending millions of dollars improving these rivers and harbors each year and plans call for expenditure of many more millions for locks and dams which will provide year-'round navigability.

Following almost in the wake of the government dredge boats as they open up these river highways, come oil company engineers to establish new terminals or enlarge existing ones.

For instance, Panama City, Fla., in less than a year, has developed into a leading oil port with nearly 20,000,000-gallon storage capacity at its newly-built terminals, and a steadily increasing throughput.

Looming in the not-too-distant future is improvement of the Chattahoochee River, from its mouth at Apalachicola, Fla., on the Gulf, to Columbus, Ga., some 200 miles upstream. Local interests backing the project have letters from oil companies forecasting oil traffic totaling 385,000 tons (about 120,000,000 gallons) annually if the Chattahoochee is improved. Terminals would be located at Columbus and other points along the river.

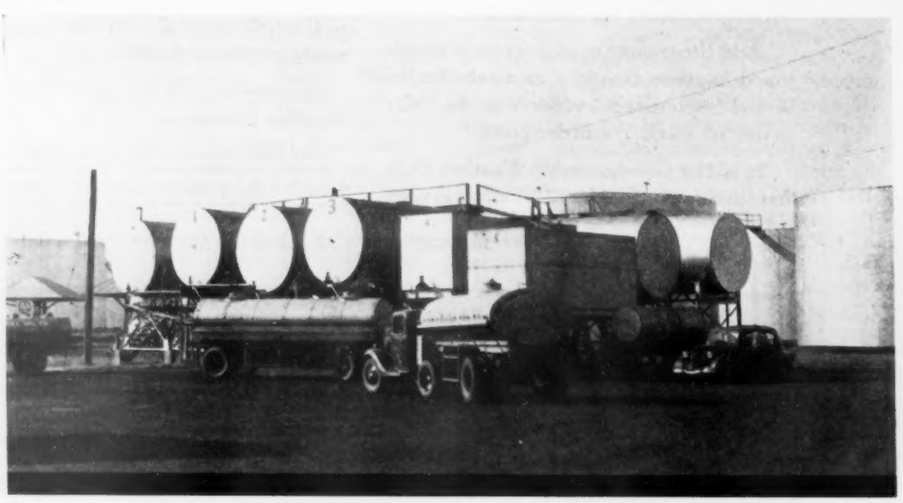
Some idea of what improvement of the Chattahoochee would mean can be obtained by a glance at figures for oil tonnage on the Alabama and Black Warrior, Warrior and Tombigbee rivers. Although these two river systems were opened to barge movement only a few years ago, approximately 32,000,000 gallons of gasoline last year were barged upstream from Mobile on their waters, as far as the Port of Birmingham, a distance of 417 miles.

Oil tonnage handled at the principal South Atlantic seaports increased substantially last year, following similar gains in 1935 and 1934. For example, the gasoline tonnage of Norfolk, Va., increased approximately 45 per cent in 1936, compared with 1935, while that for Jacksonville, Fla., was up 25 per cent, and for Savannah, Ga., 20 per cent.

Included in the total for Savannah was a volume of nearly 6,000,000 gallons, which was barged up the Savannah river, most of it nearly 200 miles to Augusta, Ga.

Practically all of the petroleum products consumed in the six states come by tanker or barge from Gulf Coast refineries, pass through a terminal at one of the ports, and thence move inland for as much as 400 miles by barge, truck and rail. The volume coming in from western refining points by the all-rail overland route is negligible.

Except for Coastal Petroleum Corp. at Mobile, an independent refining company,



Colonial Oil Co., Savannah, Ga., has one of the largest terminals along the southeastern seaboard. Not only does Colonial, an independent jobber, receive its own supplies here, but it also terminals for several major companies. Throughput of this terminal is in excess of 50,000,000 gallons annually. Tankers with a capacity of 75,000 barrels can dock there

READ THIS LETTER FROM A HEIL TRAILERIZED TANK USER ADDRESSED TO A HEIL DISTRIBUTOR IN MARION, INDIANA!

Dear Sir:

I am so well pleased with the "Trailerized" unit, made by HEIL, recently purchased from you, that I want to tell you about it.

My thoughts were to haul my gasoline from the refinery to my bulk plant, and naturally I was thinking of purchasing an ordinary tank of 3,000 gallon capacity, as other tanks & trailers seen in every community.

You recall when we discussed "Trailerized", I thought it impossible to build such a unit and maintain the proper stability. After comparing the pay loads I found with the "Trailerized" unit, (or frameless trailer as I call it), I could carry considerable additional gallonage per load and still have no more weight than with the old type.

Since purchasing your "Trailerized" tank I have examined several other units and in my opinion you should be thankful you are distributor for "HEIL". Their engineering and workmanship is beyond question, and as for neatness in appearance, I could offer no suggestions or improvements. It is impossible to see the welds of the different compartments from the outside, giving the appearance of being cast in one "pouring".

My Company, which is one of the majors in the oil industry, made the following remark, "That is the finest piece of equipment that comes into Chicago".

Any time you have a prospect I would be more than glad to show them my unit. With best wishes, I remain,

Very truly yours,

W. V. Rugar

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*TRAILERIZED TANKS HAUL *Bonus Load!*

Heil Trailerized tanks have skyrocketed to fame because they COMPLETELY solve the bulk haulers delivery problems . . . These efficient, frameless trailer tank units have the strength of Gibraltar and yet incorporate weight saving features to insure maximum payload . . . It will pay YOU to investigate Heil tanks before you buy — they're DESIGNED RIGHT and BUILT RIGHT by an organization that has for 36 years been fabricating all kinds of transportation tanks for oil marketers everywhere . . . Address your inquiry to:

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★ Trailerized — The Heil trade name for a frameless tank and frameless running gear — "All-in-one"

Heil trailerized construction insures: Undivided responsibility . . . Less dead weight and more payload . . . Less wind resistance . . . Easier handling . . . Less maintenance cost . . . Greater tire life . . . Lower center of gravity . . . Greater safety . . . all of which means LESS DELIVERY COST PER GALLON! . . . Ask for Bulletin: TT537.

Seventy-five per cent of the 1,000,000-gallon-a-month throughput of this Wilmington, N. C., marine terminal of Republic Oil Co., Pittsburgh, is trucked out, with the independent jobbers who are exclusively served here either coming after their own supplies by truck or sending a contract carrier for them

there is no refinery now operating in the southeast.

Railroad rates from independent refining points in Louisiana, Arkansas, Texas and elsewhere into the southeast are prohibitively high. For reasons perhaps satisfactory to themselves, the railroads have been willing to sit back and let the tankers and barges hauling from the Gulf Coast take over the long-haul movement of petroleum products into these states.

However, the railroads have fought viciously to retain the short-haul oil traffic moving inland from seaport terminals. Rail rates have been slashed to the bone to combat the inroads of trucks and barges on this short-haul movement, but with little visible effect.

Major oil companies have their own fleets of tankers and barges, hauling from their refineries to seaport terminals in the southeastern states. Naturally, they are interested in having rates as low as possible on movement inland from these terminals. Every rate slash on this inland movement, without corresponding reductions in all-rail overland rates, has increased the differential burdening oil jobbers desiring to buy from independent refiners in the southwest.

This is the situation which makes it very difficult for oil jobbers in the southeast to do anything but buy from a major company and sell under the supplier's brand.

But enterprising independent oil jobbers in the southeast have developed various means for improving their position over what it would be if they were wholly dependent upon railroad shipments from the major oil company terminals.

Some jobbers have hired contract truckers to haul from seaport terminals at less-than-rail rates, while others have their own transport trucks and haul for themselves and for other jobbers as well.

Building of ocean terminals has enabled some jobbers to buy in cargo lots, with deliveries by tanker direct from refineries on the Gulf Coast.

Then, there are jobbers barging out of major company seaport terminals, and others who send their barges along the Intracoastal Canal direct to independent refineries for supplies and sell under their own brand.

A few larger jobbers operate barges from their own ocean terminals to river terminals, hauling out of these terminals in their own transport trucks to bulk plants. This is the type of operation followed by the Orange State Oil Co., an independent oil jobbing company, operated by John E. Fenn, with headquarters at Miami, Fla.

THIS company distributes Cities Service products throughout all of Florida but the extreme western tip, and Florida is no pocket-size state.

Orange State is perhaps the largest independent oil jobber in the country, with a gallonage running well over 25,000,000 gallons, and 55 bulk plants scattered over the state. No small part in its growth has been through its effective co-ordination of water and truck transportation.

Buying in cargo lots, with tankers docking at its own ocean terminals, Orange State barges from Miami to Palm Beach and down the Florida keys to Key West; from Jacksonville up the St. Johns River to Sanford, and from Tampa across the bay to St. Petersburg.

Orange State uses the railroads only to ship an occasional car to a commercial consumer. Operating 15 transport trucks itself, besides those of its sub-jobbers, 98 per cent or more of this jobber's overland movement is by truck. From the bulk plants, smaller trucks haul to its retail outlets.

James River Oil Co., Richmond, Va., owned and operated by the Kirkmyer brothers, also has its own ocean terminal and operates its own barge and transport trucks.

For several years James River Oil leased storage at Portsmouth, Va., but it has now completed its own deepwater terminal at Norfolk, Va., with 4,200,000 gallons storage and a dock capable of accommodating tankers direct from the Gulf. Throughput of this terminal is running about 1,000,000 gallons monthly.

With its own towboat (formerly a government rum-chaser) and a 150,000-gallon barge, James River Oil ships overnight 115 miles upstream to Richmond. From both terminals a considerable volume of its gallonage is moved by transport trucks. Distributing Cities Service products, this jobber covers nearly all of Virginia.

Typical of oil jobbers who can—and do—go direct to the independent refineries and bring back their supplies in their own barges are Citizens Oil Co., of Columbus, Ga., and Independent Oil Co., of Dothan, Ala.

Citizens, operated by Cecil Clark, has a marine terminal on the St. Marks River at Newport, Fla. Clark has his own barge of 210,000 gallons capacity which he sends along the protected waterway of the Intracoastal Canal to an independent refinery at Mobile, or to New Orleans terminals of East Texas refiners.

Clark sells to smaller independent jobbers hauling out of his terminal. But the bulk of his 500,000-gallon monthly throughput moves through his own stations, marketed under his own brand. Each of these stations has from 4000 to 16,000 gallons storage, so each can take a full truckload direct from the terminal.

Clark operates seven transport trucks—four of them his own—hauling as far as Atlanta, 300 miles away from the terminal. Besides this, he operates four bulk

"Increasing Costs MADE ME BUY A FRUEHAUF"

THIS man meant that haulage equipment must now be bought strictly on the basis of how much money it will save —due to the rapidly increasing cost of doing business. The simple fact that he chose Fruehaufs tells its own story— excepting for those who want to know just *why* these Fruehauf Trailers haul gasoline at less expense.

Number one on the list of reasons is Fruehauf engineering. We have not discovered any short-cut to taking the last penny out of haulage expense. With us it's still a case of carefully gathering the facts about your problem, analyzing them in detail, and then working out the exact Trailer for your *individual* job.

It's a painstaking method, but it does seem to cut another fraction off each gallon's delivery cost.

It's the reason, too, why Fruehauf Trailers include so many features— an exclusive frame design, rocking upper 5th Wheel, interlocked spring construction, I-Beam axle, Fruehauf-built power brakes, etc. They're the natural result of intensive engineering by the largest staff of Trailer engineers in the country.

Briefly, Fruehauf Trailers will do your hauling at a saving because they pull easier (require less fuel), last longer (cost less to maintain), and they are designed specifically to give utmost protection to tank and load.

When you are ready to consider Trailers, call Fruehauf first. You'll get expert counsel without obligation and we'll rest our case on the ability of Fruehauf Trailers to do a cost-cutting job for you second to none.

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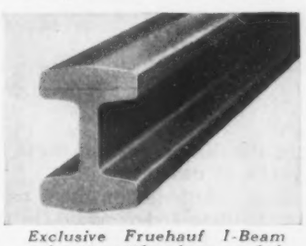
Power brakes — designed and built by Fruehauf especially for Trailers. They're safe!

The 5th Wheel is cushioned on two of these blocks of live rubber. Protection for tank.

Oversize bearings — precision fitted—for easy rolling. Spindles ground in our own factory.



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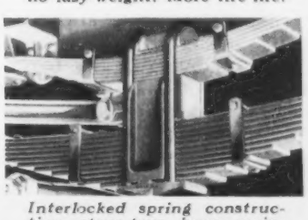
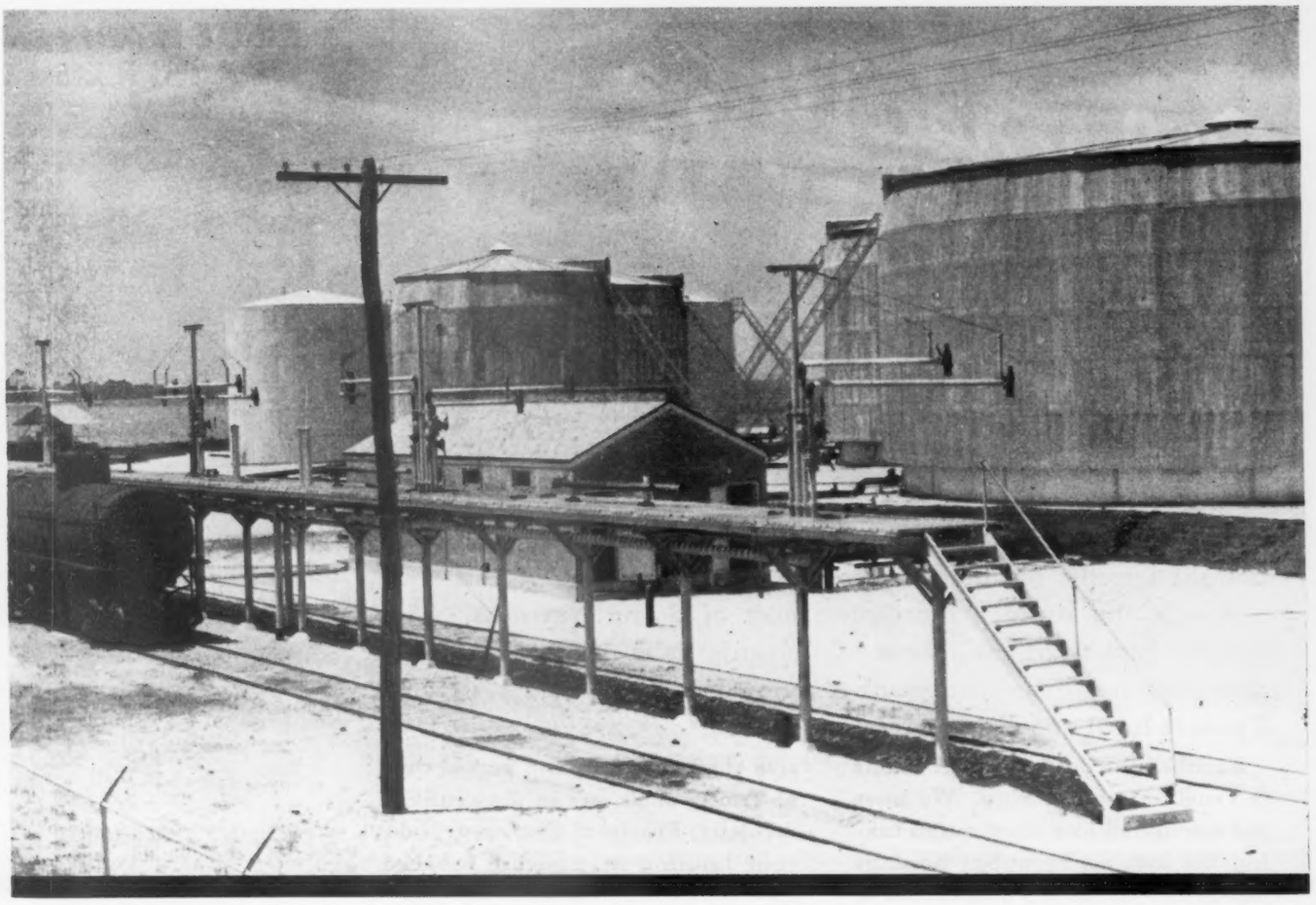


Interlocked spring construction—stays true, keeps maintenance down. Easily serviced.



Looking down past a loading rack and between two tiers of hooded storage tanks at the Panama City, Fla., marine terminal of Standard Oil Co. of Kentucky, one of the most modern in the southeast. Capacity of this terminal is 6,500,000 gallons

plants, distributing out of these by smaller trucks to dealers.

A new 175,000-gallon steel barge soon will be hauling Independent Oil Co.'s supplies from independent refineries on the Texas Gulf Coast, a thousand miles or more, via the Intracoastal Canal. Charles J. King, owner of this independent oil company, is building the barge himself on the banks of Basin Bayou, Fla., where he has his marine terminal.

King lives at De Funiak Springs, Fla., half-way between his marine terminal and his Dothan, Ala., office. He now has two towboats and two smaller barges, hauling out of Mobile, New Orleans, and, occasionally, Houston. He sells under his own brand.

This type of operation, however, is not at present open to independent oil jobbers in general on the Atlantic Coast. Larger barges or even tankers would be required to make the trip worthwhile, as well as to brave the open waters in coming around the Florida coast.

However, if and when the ship canal across Florida is built, it will afford a protected waterway from Boston down the Atlantic Coast and around the Gulf all the way to Corpus Christi, Texas.

This will enable independent oil jobbers, or groups of jobbers, on the Atlantic seaboard to pool their operations and send barges to Texas refineries for their gasoline. They need not have their own towboats, as towing companies already are operating over these waterways.

But even if the independent oil jobber on the Atlantic Coast can't send his own tanker or barge to the independent refiners on the Gulf Coast, he can build his own ocean terminal and have his supplies brought around in the refiner's tanker.

In this category is the Colonial Oil Co., of Jacksonville, Fla., an independent oil jobbing company owned and operated by a father-and-son team, J. G. Boyd, Sr. and Jr., which has its own deepwater terminal of 1,000,000-gallons capacity.

COLONIAL buys from Republic Oil Co., receiving its supplies by tankers operated by this independent refiner, and marketing under its own brand, "Colonial 76". This jobber sells to smaller jobbers in Florida, Georgia, Alabama and South Carolina. About 90 per cent of the terminal's throughput moves out by transport trucks.

Colonial was the first jobber in Florida to transport petroleum products long distances, by truck. Back in 1932 it began trucking out of its terminal to Orlando, Fla., a distance of about 150 miles. A 1600-gallon tank was mounted on a Ford Model "A" chassis in order to come within the legal weight-limit for trucks.

In North Carolina, there is an independent oil jobber who operates no transport trucks and has no rail facilities at any of his five bulk plants. He is J. H. Parker, of New Bern, who owns the Coastal Oil Co.

Parker operates the COLONY, a 27,000-gallon tankship, hauling out of the Shell terminal at Wilmington, N. C. Built especially for service on the Inland Waterway, this tankship has five compartments and makes the 100-mile trip to Wilmington two, and sometimes three, times a week.

Besides the terminal at New Bern, this jobber also has four "marine bulk plants", at Morehead City, Bayboro, Jacksonville and Hobucken—all in North Carolina. Each of these is located directly on the Inland Waterway or some offshooting inlet or creek, and is served by the COLONY. From these terminals, Coastal serves its dealers and stations within a 25-mile radius of each by seven small trucks.

Another Colonial Oil Co.—not connected with the one at Jacksonville, Fla.—has, at Savannah, Ga., one of the largest deepwater terminals on the South Atlantic coast, with 17,000,000 gallons storage. This independent oil jobbing company, founded by Raymond M. Demere in 1921, has grown from an humble beginning to one of the larger local industries.

It operates a barge down the coast to Brunswick, Ga., and a fleet of transport trucks out of its Savannah terminal to 15 bulk plants serving 250 retail outlets. There is also a Colonial Bunker Oil Co. which serves the U. S. Navy and many of the vessels from all parts of the world which put into Savannah's harbor.

Selling Pure Oil Co. products, this Savannah jobber receives its supplies by barge from the Pure Oil ocean terminal a little way down the river.

But there is another phase of Colonial's business which makes its operations dif-

FEDERAL TRUCKS

THE new Federal trucks are distinguished by their beautiful outward appearance. But far more important is the "hidden value" that is built into them—the sound engineering, the precision, the stamina and the high quality of the inner parts and materials not visible to the eye. Federal is proud of its reputation for employing honest construction through and through; proud to say that every Federal is ALL TRUCK. These are the reasons why Federal trucks are noted for giving "Years of Faithful Service."

And from the Federal line of twenty-eight different models from ¾ to 7½ tons you can select a truck that will meet your own specific requirements as to type, size, wheelbase and performance—a truck that is correctly fitted to your job.

Supplementing the large group of conventional models Federal offers a new series of cab-over-engine trucks which embody many outstanding features. There is also a specially designed frequent-stop delivery truck. Federal-built cabs and both standard and custom-built bodies, matching the high quality of Federal chassis, are supplied for every purpose.

Learn more about the importance of the "hidden value" in Federal trucks. See your Federal dealer or write direct to the factory.

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FEDERAL TRUCKS

ferent from those of other jobbers. Colonial terminals for Arkansas Fuel Co. (Cities Service), The Texas Co., and Republic Oil Co. Throughput of its terminal runs to over 50,000,000 gallons a year.

At Hopewell, Va., Delta Oil Co., an independent oil jobbing company founded in 1914 by the late S. D. De Shazor, of Petersburg, Va., built a deepwater terminal several years ago. From time to time tankage was added until it outgrew the company's gallonage.

De Shazor hunted up his friend O. D. Robinson, of Republic Oil Co., of Pittsburgh, and "sold" him on the idea of Republic buying a half interest—no more—to increase the terminal's throughput. This was done; and City Point Terminal Co. was organized, with Republic and the De Shazor interests dividing the stock exactly.

Besides the Hopewell terminal and its terminaling arrangements with Colonial at Savannah, Republic also operates a deepwater terminal at Wilmington, N. C.

Throughput of the Wilmington terminal is running about 1,000,000 gallons a month, with about 75 per cent of this moving out by transport truck. Its sales are exclusively to independents, most of whom either send their own transport trucks for supplies or hire contract haulers.

Except for the Republic terminals, the Coastal refinery at Mobile, and the terminals like those of Colonial Oil Co. at Jacksonville, Fla., Clark at Newport, Fla., and King, at Basin Bayou, Fla., there are few places where an independent wishing to sell under his own brand can buy gasoline in the southeast.

Besides the types of jobber operation already mentioned, there are scores of independent jobbers, like Quality Oil Co., of Winston-Salem, N. C., who are not now operating their own marine terminals but who send their own trucks to the seaports and haul out of their suppliers' terminals.

Quality Oil operates six 4000-gallon transport trucks—two of them powered by diesel engines—which make the 200-mile trip to Wilmington daily, hauling out of the Shell terminal.

The Newport, Fla., marine terminal of Citizens Oil Co., Columbus, Ga., Independent jobber. Gasoline in the 400,000 gallons storage capacity is brought in Citizens' own 5000-barrel barge from Gulf Coast refineries

With the opening of new waterways in the southeast, new opportunities for the independent oil jobber will be afforded. The Chattahoochee, and half a dozen other rivers, likely to be improved before long, will furnish water highways to the seaport terminals.

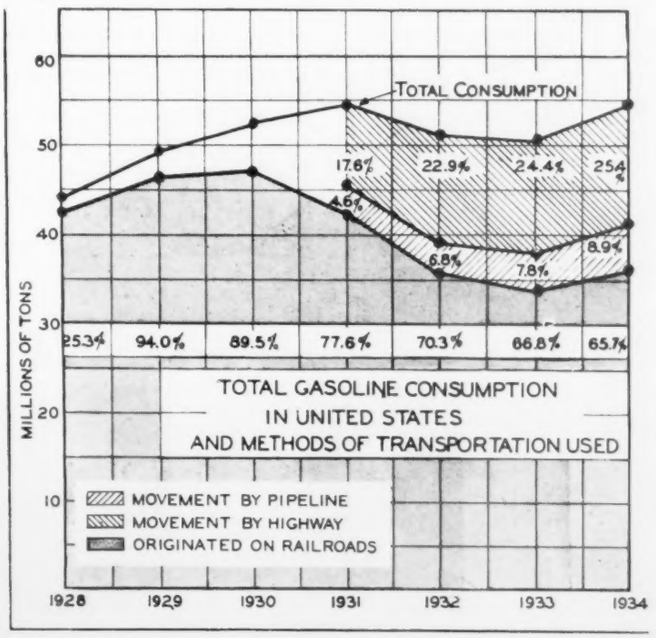
A series of locks on the Savannah River to Augusta, Ga., has just been completed, and Congress is likely to enact a law shortly authorizing the Inland Waterways Corp.—the government-owned barge line—to extend its operations to the Savannah River. This means that some enterprising jobbers in the section around Augusta may be able to arrange for barging their supplies upriver from Savannah.

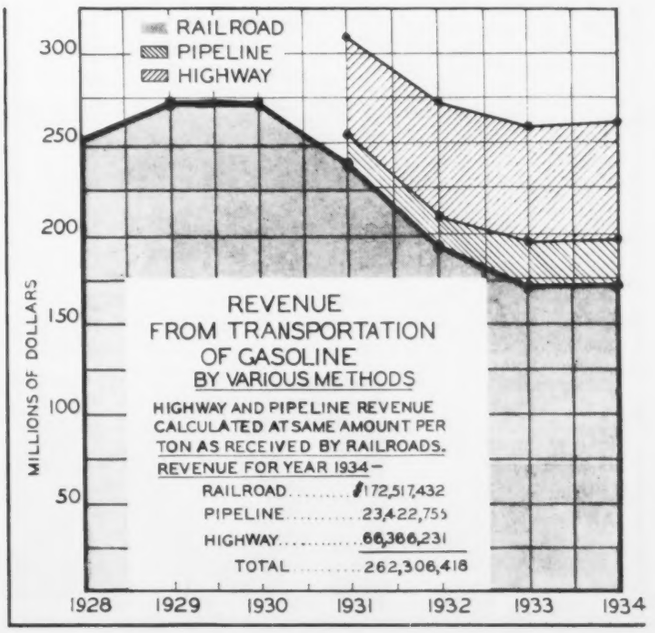
Another development in barge-truck transportation, which will change the whole marketing picture in the southeast, is the extension of navigation on the Tennessee River—already begun as a part of the gigantic TVA program.

The Tennessee, which flows into the Ohio and thence to the Mississippi, loops down into Alabama, approaches close to the Georgia line, then swings northward near the western part of the Carolinas and Virginia.

With the completion of this Tennessee River work, independent refiners in Kentucky, Louisiana, Arkansas and elsewhere on the Mississippi system can barge up the Tennessee River; and with more liberal truck laws in the state of Tennessee, a heavy movement of petroleum products by transport trucks from terminals along this river into several of the southeastern states would likely follow.

With this *eastward* movement of petroleum products from independent refineries counteracting the flow from the major company seaport terminals, great changes would be brought about in the southeast's marketing set-up.

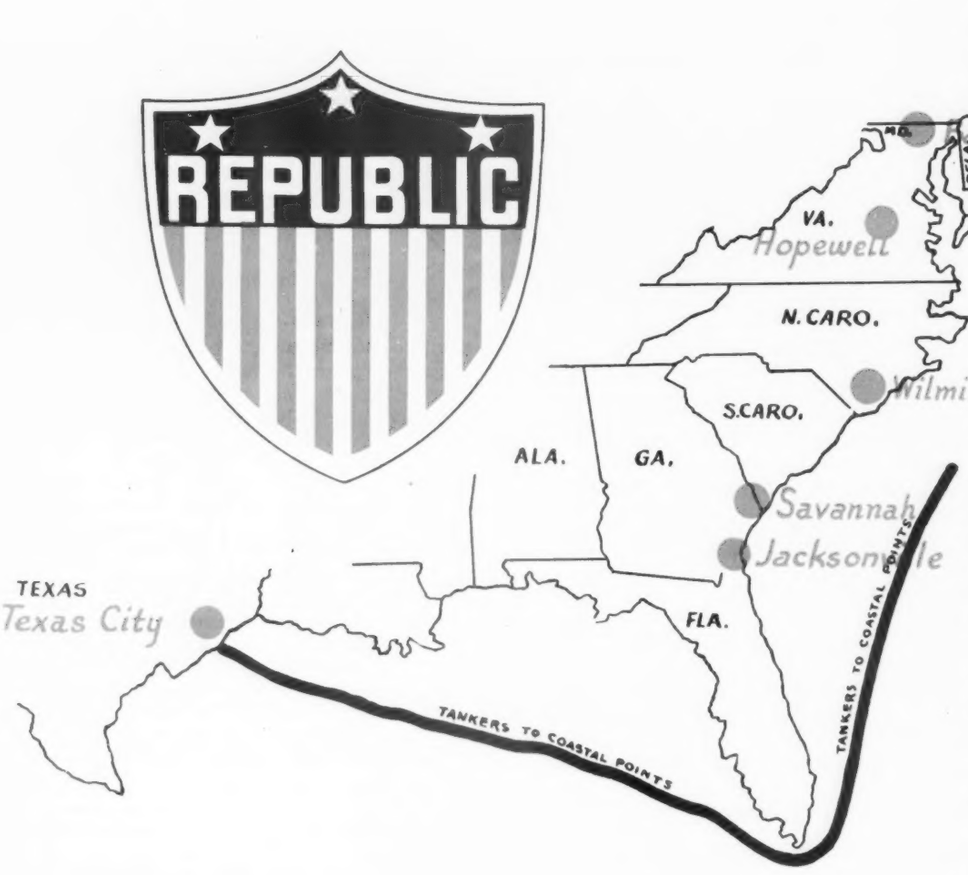




These two charts are exhibits in a case filed by the railroads with the new Mo or Carrier Division of the Interstate Commerce Commission at Washington, as their own evidence of the extent to which transport trucking of petroleum products is becoming an accepted method of transportation. The data only extends through 1934. In that year the railroads show that long distance trucking handled 25 per cent of the total volume of gasoline consumed in this country; and that the motor transport of gasoline produced a revenue in that year of over $66,000,000. Trucking now has a larger percentage of this business

Indepe

FOR THE INDEP



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Your Independence as a jobber in the Area shown here is made positive with a Republic tie-up—for—from these Terminals you may receive your products by Tank Car, Barge or Truck.

Such an arrangement plus the quality of Republic Products assures your success.

Republic invites your inquiries. Get in touch with office nearest you.

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B L I C

FOR THE INDEPENDENT JOBBER

Standard Oil Co. of New Jersey supplies its distributor, Standard Oil Co. of Pennsylvania at Pittsburgh by barge from its pipeline terminal at Midland, Pa., on the Ohio river. These barges are getting ready to unload at the Pittsburgh terminal

Biggest Gain In Water-Borne Oil Is On the Mississippi–Ohio

By M. G. Van Voorhis
N. P. N. Staff Writer

• • •

WASHINGTON

TOTAL domestic movement of petroleum and petroleum products by water reached an all time high in 1936, it is indicated in preliminary figures of the U. S. War Department's engineering office. Most significant of all gains—though not the largest in volume—are those on the Mississippi and Ohio rivers. Increases on these rivers and tributaries surpassed in 1936 even the notable gains made in each of the past three years.

The 5,800,000 barrels of gasoline * which entered the Ohio river from the Mississippi river in 1936 compares with 3,170,000 barrels in 1935 and 2,500,000 in 1934. The gain in 1936 was over 80 per cent. Upbound water-borne gasoline in the various districts of the Ohio river are shown in Table 1. Gains are most evident in the upbound movement while declines are shown in two districts for downbound traffic.

Of the Ohio's tributaries, the Cumberland river made the most remarkable gains. Nearly half as much gasoline was barged up the Cumberland in 1936, as came into the Ohio river from the Mississippi. Over 2,500,000 barrels went to Nashville and a few other smaller towns on this river. This was about three and a half times the 1935 volume and more than ten times as much as moved up the river in 1934.

The gain in movement on the Ohio river is evident also in Table 2, for the Mississippi river, in the two districts divided by the Ohio river. The upbound movement above the Missouri river is outstanding for its multiplication of volume. The possibilities of the upper Mississippi for transporting oil products by water are just being realized. Shell Oil Corp. has been a leader in the past year in opening up barge movement. Oil terminals have been opened for this company's products at St. Paul and at Bettendorf and Burlington, in Iowa.

The White Eagle division of Socony Vacuum Oil Co. has also started construction of a large terminal at St. Paul. Both companies have refineries near St. Louis. Development on the upper Mississippi may be expected to reach much larger proportions in the next two or three years. A project of locks and dams now under way to give a nine-foot channel all the way to the Twin Cities is scheduled for completion in 1939.

Shell is not confining its interests to the upper Mississippi, however, nor even to the Ohio and its tributaries, where its products are being barged in increasing volume. New terminals on the Great Lakes were added by these interests in 1936.

The Standard companies, of course, have been barging for a number of years on the Mississippi and tributary streams. Phillips Petroleum Co. has no water terminals of its own but has served at East St. Louis as a source for independent jobbers who have terminal facilities and can bring their own or leased tank barges to its dock. Pure Oil Co., Gulf Refining Co., American Oil Co., Sun Oil Co., Atlantic Refining Co., Ashland Refining Co. and others have been active on the Ohio river.

Gasoline movement has been stressed since it is far above other products in importance. The principal crude oil movement from Producers' pipeline terminal at Owensboro, Ky., to Louisville jumped from 1,750,000 barrels in 1935 to 2,060,000 barrels in 1936. Other movements of crude oil were mainly below Baton Rouge on the Mississippi and are listed under the head of coastwise commerce.

Fuel oil movement by water suffered

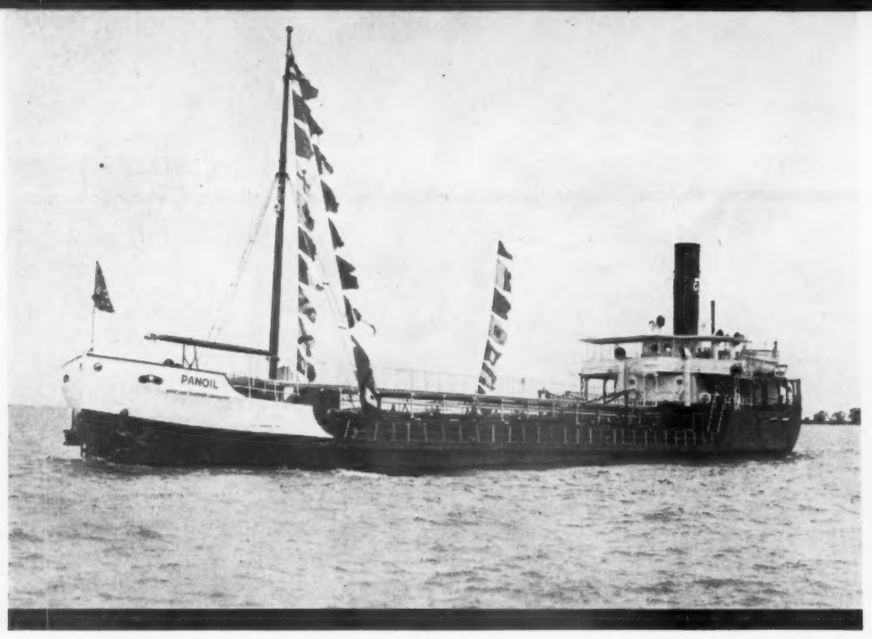
* Throughout this discussion the following multiplying factors have been used to reduce government tonnage figures to barrels: gasoline, 7.7; kerosine, 7; crude oil, gas oil and fuel oil, 6.7; and lubricating oils, 6.3.

SHIPMENTS BY WATER

Our plant is not only one which is equipped with every modern facility for the production of massive, all welded pieces of refinery equipment, but it is located at the mouth of the Philadelphia Harbor with piers, large cranes and every facility for water shipments direct from our plant.

SUN SHIPBUILDING & DRYDOCK COMPANY

Chester, Pennsylvania



The Panoil, one of Great Lakes Transport Corp.'s three vessels, on parade. The Panoil has 760,000 barrels capacity. It is 246.6 feet long, 38 feet wide and has a draft of 18 feet

considerable decline in the Pittsburgh area but, on the Mississippi river, gains were made in all districts from Baton Rouge to Twin Cities.

Flood conditions this winter on the rivers have raised the question as to whether barging of petroleum products will be seriously hampered in the future but, from all authorities, the answer comes back an emphatic no. Cincinnati's disastrous experience threatened to handicap the building of river terminals through drastic regulation but, when it became evident that it was largely failure to take the proper precautions that resulted in property destruction, regulations were directed at responsibility and safe practices. Standards of protection for storage tanks in flood regions were worked out by a joint committee of fire underwriters, fire chiefs, and the American Petroleum Institute.

Though costs of barging are governed by many variables, some idea may be gained from the quotations of Federal Barge Lines to several interested oil companies. The towing rates up stream from Wood river to Twin Cities was $2.25 per net ton; to Dubuque, $1.45; to Rock Island, $1.25; and to Burlington $1.

The best evidence of gain in coastwise movements may be obtained from shipments on the Gulf coast. Taking ten major ports or other points of origin of coastwise shipments, there is found an increase for 1936 of nearly 8,000,000 barrels of gasoline, of over 19,000,000 barrels of fuel oils, including kerosine, and close to 15,000,000 barrels of crude oil. These figures represent an increase of 8.3 per cent for gasoline, 21.7 per cent for fuel oils, and 9.6 per cent for crude oil shipments.

The detail figures are given in Table 3 for coastwise shipments from the Gulf coast. The preliminary figures indicate a shifting in the points of origin of shipments. Texas City, Houston, and Sabine Pass harbor had less shipments of crude oil in 1936, whereas Port Aransas, Corpus Christi, and the pass connecting these two ports jumped way up in crude oil volume. Houston made a wide gain in gasoline coastwise shipments.

The southeastern states, which are practically a unit by themselves from the standpoint of water-borne petroleum products, made wide gains in coastwise receipts, preliminary figures indicate. The extent of these gains is shown by Table 4. Elsewhere in this issue is an article telling how gasoline is distributed in this area.

One of the interesting developments in the southeast has been on the Savannah river, to Augusta. For the first five months of 1937, immediately following the opening of the new $2,000,000 government locks and dam 14 miles below this city, petroleum traffic moving up the river almost equalled the total movement for 1936.

Last year's gallonage of 80,620 barrels, all of it gasoline, compared with 72,429 barrels in the January-May period this year.

Wofford Oil Co., distributor of Pure Oil products in Georgia and the Carolinas, is the only oil company which as yet has taken advantage of this distribution method—linking its ocean terminal at Savannah with speedy, efficient truck transportation from an inland river terminal by barging.

A bill passed by Congress June 14, extends the Inland Waterways Corp. operations to the Savannah river. Coming of this government-owned barge line may enable smaller oil companies to take advantage of low-cost river transportation, thus expanding even further the truck movement out of Augusta.

Major General T. Q. Ashburn, president of Inland, has announced his readiness to put several towboats into service on the river.

Insufficient data is available to show the growth of coastwise receipts of oil products by water movement, at ports north of Baltimore. On the Pacific coast there are both receipts and shipments to be considered. Principal port for shipment of petroleum products was Los Angeles and the jump in shipments from this port was from 28,000,000 to 48,000,000 barrels in 1936, which was an increase of over 70 per cent. Richmond, Cal., shipments rose from 6,000,000 barrels to nearly 9,000,000. This port had the largest receipts of crude oil on the Pacific coast and enjoyed an increase from 15,000,000 barrels to 22,000,000 barrels.

Long Beach had the most pronounced drop in receipts of refined products, according to preliminary figures. In 1936 its receipts of nearly 5,100,000 barrels were nearly 2,800,000 barrels short of

TABLE 1

Barge Movement of Gasoline on the Ohio River in 1935 and 1936
(Figures in Barrels)

		Louisville District	Cincinnati District	Huntington District	Pittsburgh District
Upbound	1936	6,251,276	2,392,829	1,081,627	2,076,128
Upbound	1935	3,564,200	1,515,950	646,800	1,914,860
Downbound	1936	881,404	1,666,734	1,605,412	1,510,671
Downbound	1935	1,030,050	1,438,700	1,519,550	1,641,950
Movement up the Cumberland River	1936	2,559,450	.....	.....	.....
	1935	751,740	.....	.....	.....

TABLE 2

Barge Movement of Gasoline on the Mississippi River in 1935 and 1936*
(Figures in Barrels)

		Gulf to New Orleans	New Orleans Baton Rouge	Baton Rouge to Ohio R.	Ohio R. to Missouri R.	Missouri R. to Minneapolis
Upbound	1936	787,456	1,052,875	5,620,276	17,240	700,662
Upbound	1935	620,227	886,963	4,919,861	900	55,386
Downbound	1936	8,755	72,442	363,078	2,929,742	†2,384,036
Downbound	1935	8,947	124,786	345,522	1,309,023	†1,303,163

*U. S. War Dept., Commercial Statistics of Water-Borne Commerce. Figures for 1936 are preliminary.
†Originates at Wood River and Alton, Ill.

TABLE 3

Gulf Coast Shipments of Crude Oil and Petroleum Products from Principal Ports
(Barrels)

Port	Gasoline 1935	Gasoline 1936	Fuel Oil and Kerosine 1935	Fuel Oil and Kerosine 1936	Crude Oil 1935	Crude Oil 1936
Texas City	6,774,760	6,322,131	4,638,865	6,796,682	13,396,985	9,585,415
Houston	27,075,725	33,864,023	29,445,156	34,350,710	31,586,547	29,235,906
Channel from Aransas Pass to Corpus Christi	808,238	1,578,777	633,345	648,285	18,745,897	26,439,346
Port Aransas	.....	.....	.....	.....	6,752,515	8,327,242
Corpus Christi	160,500	62,300	139,202	903,006	3,248,274	11,702,448
Port Arthur	25,940,422	29,728,568	22,842,104	29,153,939	22,784,737	21,963,324
Beaumont	19,164,776	19,670,890	17,222,442	20,154,058	49,543,847	52,871,395
Brazos Island Harbor	.....	118,250	251,233	1,408,661	.....	.....
Sabine Pass Harbor	.....	.....	.....	.....	2,663,625	1,994,054
Miss R.—above New Orleans	9,557,871	8,614,837	10,210,130	11,460,611	4,081,070	2,834,060
Miss. R.—New Orleans and below	5,455,773	2,877,744	3,921,510	3,849,854	513,803	3,155,311
Total shipments	94,938,065	102,837,520	89,303,987	108,725,806	153,317,300	168,108,501
Per Cent Increase	.....	8.3%	.....	21.7%	.....	9.6%

Modern Union Barge Line Towboat "Neville" Built and Designed By Dravo

DRAVO

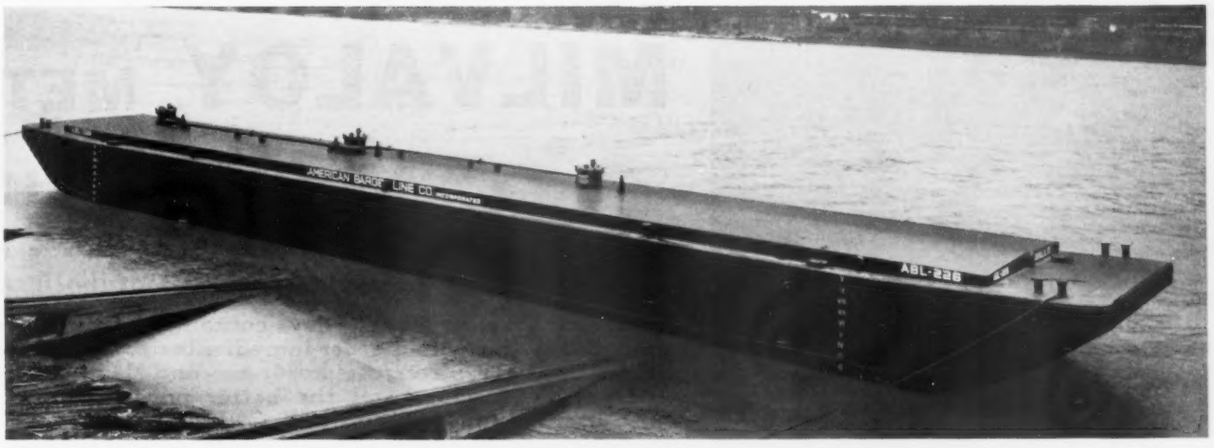
Shipbuilding Record 1936

Ranked First with 104 vessels 47,786 Gross Tons

Barges Ahead!

With a background of operating experience, a competent staff of Naval Architects and unsurpassed fabricating and building facilities, "Dravo Barges Ahead" constantly designing and building superior towboats and barges for Coastwise, Harbor and Inland Waterway Service to meet the most exacting demands of owners, the American Bureau of Shipping and the Bureau of Marine Inspection and Navigation.

"Over 1400 vessels built and launched to date"



One of seven Dravo built Gasoline Barges recently placed in River Service

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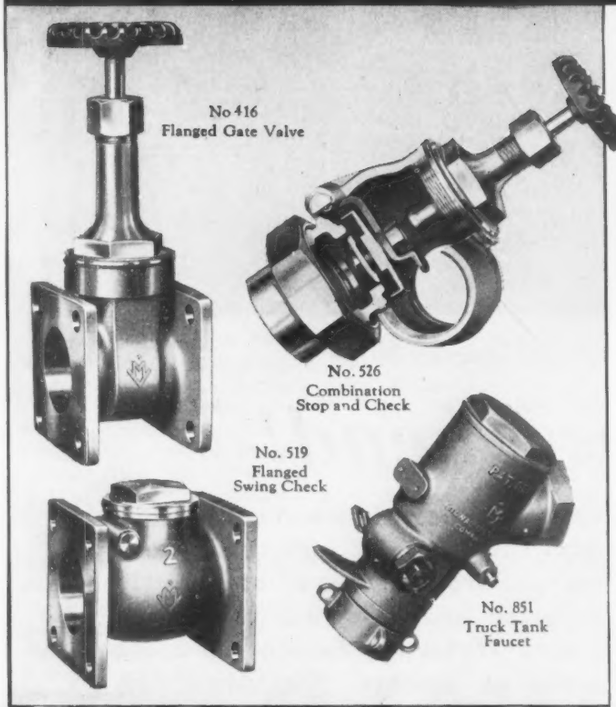


A Milvaco equipped trailerized unit built by the Heil Co. for Pure Oil Co

A Milvaco equipped trailerized unit built by the Heil Co. for the White Star Division of Socony-Vacuum Oil Co.

MILVACO valves for truck tank installation give you the speed you need plus the added important advantages of MILVACO engineering and MILVACO dependability in service.

All three factors are essential to economy and efficiency and the inter-relationship of SPEED, DURABILITY and POSITIVE SHUT-OFF are integral parts of MILVACO valves.

MILVALOY

PRODUCTS OF MILVALOY METAL

1/3 THE WEIGHT OF BRONZE OR IRON . . . . *yet embody all the desirable properties of both metals.*

MILVALOY is a light alloy containing silicon, copper, manganese, nickel and other ingredients necessary to produce greater tensile strength, hardness and lasting qualities. MILVALOY embodies all the better physical properties of both bronze and iron with only ONE THIRD THE WEIGHT.

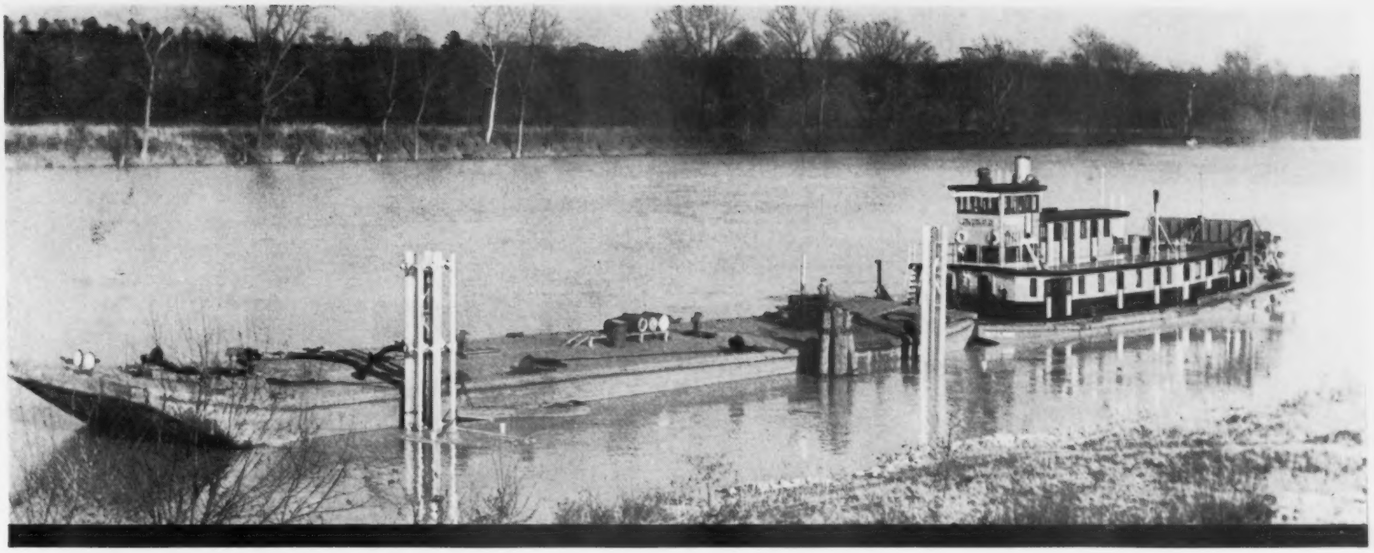
MILVALOY valves have withstood the most severe laboratory tests and have already proven their superiority by a wide margin in actual service.

MILVALOY MUST NOT BE CONFUSED WITH ORDINARY ALUMINUM OR SOFT, UNSATISFACTORY ALLOYS.

MILWAUKEE VALVE COMPANY

MILWAUKEE *Manufacturers of* **WISCONSIN**

MILVACO VALVES AND FITTINGS FOR THE OIL INDUSTRY



Towboat "Wiley Moore" and barge unloading gasoline at Augusta, Ga., on the Savannah river nearly 200 miles inland. Recent opening of new locks and dams enabled Wofford Oil Co. to double its volume moved up the river to Augusta. Most of the movement out of Augusta is by transport truck

1935 receipts. Receipts of the two largest volume ports, Portland and Seattle, also dropped a little. Total receipts of refined products at the principal Pacific coast ports remained unchanged, Table 5 indicates, but crude receipts went up nearly 22,000,000 barrels and shipments of refined products were up about 25,000,000 barrels.

On the Great Lakes there has been activity in the building of new terminals and the increasing of storage, which has resulted in an increase in lake tanker movements. The increase of 2,700,000 barrels in lakewise receipts of refined products is distributed among all the ports. Two new ports were added to the list in 1936, Milwaukee and Erie, Pa. Receipts of 238,315 barrels of refined products at the former makes a sizable contribution to lakewise traffic. Table 8 shows the majority of terminals on the Great Lakes.

It is interesting to note in Table 6 that, in spite of the increase in port receipts on the lakes, the principal shipping point, Indiana Harbor, dropped over 1,000,000 barrels in shipments, preliminary figures show. Movement on connecting waterways has increased greatly, however. The traffic through the harbor of Oswego indicates the extent to which the New York State Barge Canal has been boosting lakewise receipts. This traffic enters Lake Erie through the Welland canal. The importance of this waterway is further emphasized by the nearly 70 per cent increase in internal receipts at Buffalo. Two large terminals were completed on the Niagara river in the past year, others were enlarged, and another is now building. Buffalo has just begun to use this waterway for barging petroleum products, observers declare, and 1937 will see a continued expansion at this industrial center. Total New York State Barge Canal traffic in petroleum products is given by the state Department of Public Works as 13,000,000 barrels in 1935 and 15,600,000 barrels in 1936.

In the Chicago area the Calumet-Sag canal now has a terminal at Riverdale which apparently received over 200,000 barrels of fuel oil in 1936 from Shell's refinery near St. Louis. It is possible that gasoline may be barged to this terminal this year or next. Globe Oil & Refining and The Texas Co. produced nearly 2,000,000 barrels of internal shipments on the Illinois waterway, which were largely received in Chicago and Indiana Harbor. Traffic on the St. Lawrence canals is believed to be principally Canadian.

Not shown on the accompanying table of Great Lake movements are the crude oil shipments from the Saginaw river. These dropped from roughly 4,000,000 barrels in 1935 to only 2,850,000 barrels in 1936. Toledo receipts dropped 1,000,000 barrels to 2,500,000 barrels in 1936 and Cleveland receipts were down 238,000 barrels to 415,000 barrels.

Transport trucking in connection with lake terminals has reached large proportions in Michigan particularly, in some cases going directly from the terminal to service stations with large storage.

According to one authority, speaking for both lake and river terminals, transport trucking is on the increase though, in most instances, rail shipments from water terminals are now greater than by truck. Water transportation is definitely a factor which will boost trucking at the expense of rail shipments. City restrictions on oil storage have driven terminals to less congested areas too, where there may or may not be convenient railroad connections.

One of the principal evidences of the growth of barge movement on the inland waterways is the large volume of tank barge building which took place in 1936 and is still continuing. Some authorities state that present barge capacity is suf-

TABLE 4

Coastwise Receipts of Petroleum Products at Some of the Principal Ports of the Southeastern States

(Barrels)

	Gasoline		Fuel Oil and Kerosine	
Port	1935	1936	1935	1936
Norfolk	4,492,520	6,551,540	1,660,350	2,617,590
Cape Fear river	5,216,490	6,054,810	779,770	1,061,250
Charleston, S. C.	3,769,320	3,845,770	953,130	717,110
Savannah, Ga.	5,287,530	6,231,230	1,377,240	1,481,480
Jacksonville, Fla.	2,949,670	3,689,820	3,348,470	3,937,720
Miami	972,490	1,127,520	1,078,510	1,117,700
Tampa	2,095,510	2,324,850	2,965,820	3,354,890
Total	24,783,530	29,825,540	12,163,290	14,287,740
Increase		20.3%		17.5%

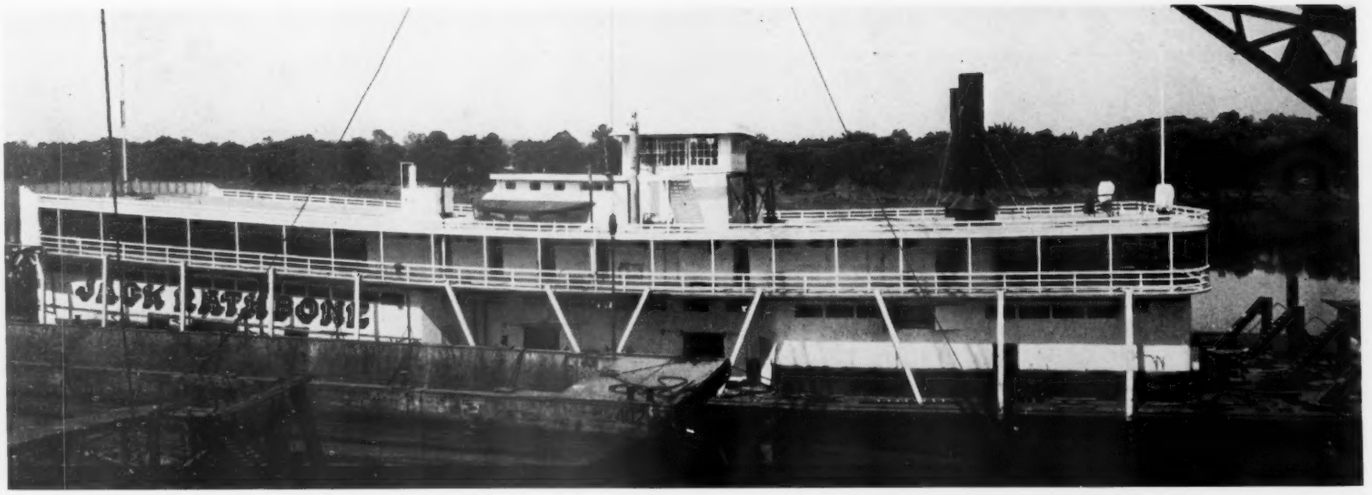
TABLE 5

Water-Borne Petroleum Products on Pacific Coast

(Barrels)

	Refined Petroleum Products				Crude Oil	
	Receipts		Shipments		Receipts	
Port	1935	1936	1935	1936	1935	1936
San Diego	1,825,658	2,595,025				
Los Angeles	1,280,336	3,073,200	28,327,500	48,149,208	8,612,033	9,333,716
Long Beach	7,874,268	5,098,727			4,616,937	4,096,900
Ventura Harbor					No report	12,800,380
San Luis Obispo			657,164	747,146	*10,678,550	*10,760,300
San Francisco	262,760	139,880	411,000	572,704		
Oakland	1,188,308	2,151,426				
Richmond	8,949,500	8,962,000	6,112,080	8,977,460	15,225,636	22,238,767
San Pablo Bay	1,700,330	2,132,583	1,873,930	2,398,760	4,437,075	4,467,547
Carquinez Strait	1,402,920	1,076,540	6,600,860	8,598,070	4,913,070	6,516,373
Portland	19,069,000	18,868,153				
Tacoma	2,578,080	3,134,140				
Seattle	15,506,290	14,732,674				
Totals	61,637,450	61,694,348	43,982,534	69,443,348	37,812,750	59,453,683

*Shipments, Crude.



Standard Oil Co. of Louisiana will accept delivery of the towboat Jack Rathbone, shown here under construction, following trial runs this week. Named for the company's new president, M. J. Rathbone, the vessel is one of three being built to transport gasoline and oil products in barges from the refinery at Baton Rouge to Louisville and other points where the company has river terminals. Average upstream tows of 60,000 barrels of oil are contemplated. The vessel is of all-welded construction—Courtesy of Marietta Mfg. Co.

ficient to take care of the demand. Others say tank barges are still unable to meet all demands. Not all towing companies have accepted gasoline cargoes in the past but, in the past year, much of the prejudice has been broken down, probably as a result of the fine record of safe operation and, of course, the increasing demand for this water movement.

Although the accident record has been excellent, the new general rules and regulations of the Bureau of Marine Inspection and Navigation should further alleviate any distrust of oil cargoes. These went into effect last November. Hardest hit by the regulations are the small operators of barges, some of whom were forced to discontinue operations. Others have had to temporarily discontinue use of barges and have been put to considerable expense to get their boats in shape to meet the regulations. Feelings of many of these operators with long records of accident-free operations runs high against major oil companies who, they feel, engineered the new regulations for their own advantage. That barges and ships of the larger companies have been built to meet the highest standards for safety is beyond question. There will be changes no doubt in the present rules as safer practices are found and to correct conflicting and unnecessary requirements, it is said.

Though coastwise shipping is increasing there are other reasons for the present program of tanker building. They are the approaching obsolescence of the existing fleets, existing and prospective costs of new construction, existing and prospective requirements, and demand for tanker tonnage. Nearly 80 per cent of existing tanker tonnage is over 15 years old and 15 years has been considered the economic life of a tanker. To maintain the tanker fleet of this country at a normal level, replacements of over 1,850,000 gross tons should be built within the next five years, or an average of over 370,000 tons a year, stated R. W. Morrell, naval architect, in the November, 1936, issue of Marine Engineering and Shipping and Review.

Tonnage of tankers of over 1000 gross tons building or under contract in the U. S. May 1, 1937, was 193,500. While this

TABLE 6

Movement of Refined Petroleum Products on the Great Lakes
Imports and Exports Not Included
(Figures in Barrels)
(Lakewise Receipts and Shipments)

	Receipts		Shipments	
	1936	1935	1936	1935
Superior, Wis.	2,918,738	2,751,550	.....	.....
Green Bay, Wis.	1,143,274	1,125,520	.....	.....
Indiana Harbor	.....	.....	13,903,210	15,084,040
St. Joseph, Mich.	522,822	340,040	.....	.....
Milwaukee	238,315	.....	.....	.....
Muskegon, Mich.	1,925,770	1,930,330	.....	.....
Traverse City, Mich.	231,254	175,300	.....	.....
Saginaw River, Mich.	1,697,481	1,568,450	.....	.....
Port Huron, Mich.	135,789	77,447	.....	.....
Detroit	7,424,760*	6,573,050	58,189	85,240
Toledo	990,055	192,400	2,626,442	2,650,870
Lorain, Ohio	185,610	192,000	.....	.....
Cleveland	2,760,460	2,491,360	984,224	892,900
Erie, Pa.	54,855	.....	.....	.....
Buffalo & Tonawanda	391,200	479,450	191,112	407,050
Totals	20,620,383	17,897,000	.....	.....

Receipts From Connecting Waterways

	1936	1935	
Chicago	734,409	644,375	Chicago Sanitary and Ship Canal
Indiana Harbor	1,342,585	1,093,090	Chicago Sanitary and Ship Canal
Buffalo	3,138,683	1,864,156	New York State Barge Canal and Black Rock Canal
Riverdale on Calumet-Sag Canal	227,619	.....	Illinois waterway

Lakewise Traffic Passing Through Connecting Waterways

Chicago River	.....	2,400	
Black Rock Canal	108,296	196,827	Through southbound
Black Rock Canal	156,453	387,880	Through northbound
N. Y. State Barge Canal through Oswego Harbor	1,660,530	1,230,585	Included in Welland Canal total
Welland Canal	2,851,511	5,589,414	—Ontario to Erie Ontario to Erie Canada and U. S. traffic
Welland Canal	3,427,050		Erie to Ontario
St. Lawrence Canals	6,530,474	6,120,409	Up, westbound Canada and U. S. traffic
St. Lawrence Canals	302,785		Down, eastbound

*Includes 363,720 barrels, coastwise receipts.

TABLE 7

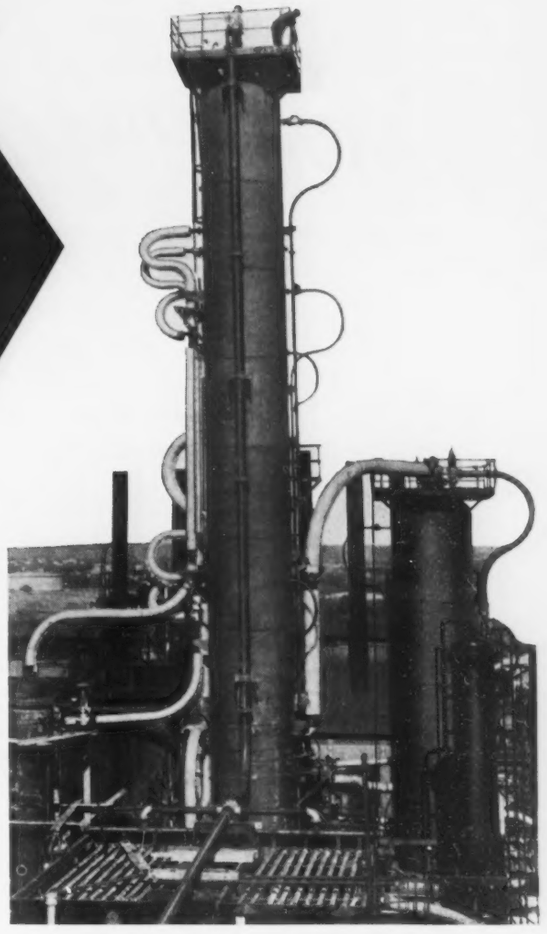
Tankers Building or Under Contract, May 1, 1937
(Seagoing Vessels, 1000 Gross Tons and Over)

Owner	No.	Shipyard
American Tankers Corp.	1	Ingalls Iron Works, Birmingham
Atlantic Refining Co.	2	Sun Shipbuilding & Drydock Co., Chester, Pa.
Gulf Oil Corp.	2	Bethlehem Shipbuilding Corp., Bethlehem, Pa.
Pan-American Petroleum & Transport Co.	1	Federal Shipbuilding & Drydock Co., Kearny, N. J.
Socony-Vacuum Oil Co., Ltd.	1	Bethlehem Shipbuilding Corp., Bethlehem, Pa.
Standard Oil Co. (Calif.)	2	Sun Shipbuilding & Drydock Co., Chester, Pa.
Standard Oil Co. (Ind.)	1	Manitowoc Shipbuilding Corp., Manitowoc, Wis.
Standard Oil Co. (N. J.)	4	Bethlehem Shipbuilding Corp.
Standard Oil Co. (N. J.)	4	Federal Shipbuilding & Drydock Co.
Standard Oil Co. (N. J.)	1	Newport News Shipbuilding & Drydock Co., Newport News, Va.
Standard Oil Co. (N. J.)	2	Sun Shipbuilding & Drydock Co.
Sun Oil Co.	1	Sun Shipbuilding & Drydock Co.
The Texas Co.	1	Bethlehem Shipbuilding Corp.
The Texas Co.	3	Sun Shipbuilding & Drydock Co.
Total	26	

A NEW JOHNSON GASOLENE

65+ OCTANE Orange Colored Non-Leaded GASOLENE

Made Possible by New Refining Equipment



This is the new Dubbs, two-coil, selective cracking unit of 2500 barrels daily capacity, recently installed at the Johnson Refinery in Cleveland, Oklahoma.

JOBBERS! If you are interested in offering your trade one of the finest quality, high octane, non-leaded orange colored gasolenes on the market, investigate Johnson Oil Refining Company's new 65-plus octane gasolene.

This new Johnson Product will help you meet popular demand—acquire new sales outlets—and increase your business from commercial consumers. It gives outstanding performance in the new high-compression automobiles, trucks and gasolene tractors. And, *you'll be interested in the price at which this new product is now being offered.*

The installation of the new refining equipment pictured above is further evidence of this Company's ability and determination to maintain such high standards of quality in its products that jobbers handling them can rest assured that their customers will be more than satisfied and their business volumes and profits steadily on the increase.

In addition to the products listed at the right, the complete Johnson line includes highest quality lubricating oils, specialized greases and a full assortment of farm and household specialties. These are unusually profitable items—included in the Johnson line as a result of nearly 29 years of highly successful producing, refining and marketing experience.

By all means, ask for full details and current quotations on the NEW JOHNSON 65-PLUS OCTANE, NON-LEADED GASOLENE. Your inquiry will receive our prompt attention.

JOHNSON OIL PRODUCTS
which will be made even better than before through the addition of this NEW EQUIPMENT are—

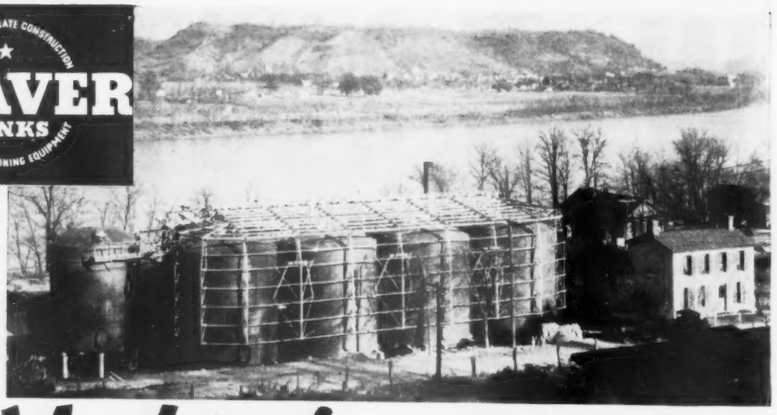
Johnson Ethyl Gasolene
Johnson Winged 70 Gasolene
Jo-Re-Co Gasolene
Johnson Special Tractor Fuel
Johnson Furnace Oil

JOHNSON TIME TELLS OILS

JOHNSON OIL REFINING CO.

20 North Wacker Drive, Chicago, Illinois

GENERAL STEEL PLATE CONSTRUCTION
GRAVER TANKS
WATER CONDITIONING EQUIPMENT



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Standard Oil Company
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Supplies and services are available at the Esso signs identifying thousands of American and foreign filling stations, selling motor fuels and lubricants from the world's largest refineries and most extensive petroleum research and development laboratories.

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26 Broadway, New York

The word ESSO is "A sign of service and a symbol of quality"

ESSO—for Premium Motor Fuel
ESSOLENE—for Regular Motor Fuel
ESSO MOTOR OIL—for Premium Motor Oil
ESSOLUBE—for Regular Motor Oil

TABLE 8

Oil Terminals on the Great Lakes

Company	Terminals
Standard Oil (Ind.)	Superior, Wis.
Standard Oil (Ind.)	Green Bay, Wis.
Standard Oil (Ind.)	Muskegon, Mich.
Standard Oil (Ind.)	Detroit
Standard Oil (Ind.)	Bay City, Mich.
Shell Petroleum Corp.	Superior, Wis.
Shell Petroleum Corp.	St. Joseph, Mich.
Shell Petroleum Corp.	Bay City, Mich.
Shell Petroleum Corp.	Cheboygan, Mich.
Shell Petroleum Corp.	Alpena, Mich.
Shell Petroleum Corp.	Milwaukee
Shell Petroleum Corp.	Port Huron, Mich.
Shell Petroleum Corp.	Toledo
Shell Petroleum Corp.	Detroit
Shell Petroleum Corp.	Cleveland
Shell Petroleum Corp.	Buffalo (Shell Eastern)
Socony Vacuum Oil Corp.	Muskegon Heights, Mich.
Socony Vacuum Oil Corp.	Traverse City
Socony Vacuum Oil Corp.	Cleveland
Socony Vacuum Oil Corp.	Buffalo (Colonial Beacon)
The Texas Co.	Chicago
The Texas Co.	East Chicago
The Texas Co.	Detroit
The Texas Co.	Cleveland
The Texas Co.	Buffalo
Gulf Oil Corp.	Detroit
Gulf Oil Corp.	Cleveland
Gulf Oil Corp.	Bay City
Gulf Oil Corp.	Erie
Gulf Oil Corp.	Buffalo
Pure Oil Co.	Toledo
Pure Oil Co.	Buffalo
Standard of Ohio	Cleveland
Standard of Ohio	Toledo
Thiesen-Clemens	St. Joseph
Thiesen-Clemens	Detroit
Thiesen-Clemens	Bay City
Thiesen-Clemens	Charlevoix
Thiesen-Clemens	Sault Ste. Marie
Sun Oil Co.	Toledo
Sun Oil Co.	Buffalo
Sun Oil Co.	Cleveland
Cities Service Oil Co.	Detroit
Cities Service Oil Co.	Bay City
Cities Service Oil Co.	Buffalo
Globe Oil & Refining Co.	Detroit
Globe Oil & Refining Co.	Holland, Mich.
Globe Oil & Refining Co.	Bay City, Mich.
Sinclair Refining Co.	Bay City, Mich.
Sunny Service Oil Co.	Detroit
Wiloil Corp.	Detroit
Wiloil Corp.	Toledo
Dixie Terminals Oil Co.	Detroit
Allied Oil Co.	Cleveland
Frontier Fuel Oil Co.	Buffalo
Petroleum Wholesale Co.	Buffalo
Hambleton Terminal Corp.	Buffalo
American Oil Co.	Buffalo

is far short of the estimated requirement, it should be borne in mind that many American tankers are built abroad. World tanker construction of ships over 1000 tons was close to 700,000 gross tons May 1. The significance of the former figure is that it represents 80 per cent of the total tonnage of all ships over 1000 tons being built in this country. It represents 26 ships out of a total of 38. Table 7 lists oil companies now building tankers.

There were 35 tank barges officially numbered by the Bureau of Marine Inspection and Navigation in the 11 months from June, 1936, through April, 1937. This is approximately a 14 per cent increase over a year ago. The net tonnage of these barges totaled 22,800, representing carrying capacity of about 160,000 barrels of petroleum products. The ownership record of these barges indicates practically all are used for this purpose. At least 10 new contracts for tank barges have been signed this spring. Eight ocean-going tankers were launched in this country the past year.

New Equipment

AND THE MANUFACTURERS

Plug-In Instruments

New detachable instruments for general industrial use, whose sockets may be cut into the conduit run feeding a motor or grouped in standard metal boxes to constitute a panel, are announced by Westinghouse Electric & Mfg. Co., East Pittsburgh. The instrument may be plugged in or removed without disturbing the permanent wiring.

* * *

Steel Stations

A new broadside in color devoted to its new "Boulevard Model" service stations is announced by Butler Mfg. Co., Kansas City. The new stations are factory prefabricated in section units. Several arrangements of section units are illustrated. Walls are formed of 16-gage black steel into double channel sections. Sections are two feet wide and make a wall three inches thick.

Sections are joined by bolting through inward flanges of the vertical seam so that no bolts are visible. Seams are packed with roofing felt and made water-tight with a specially prepared mastic forced into the seam with a pressure gun. All steel parts are painted with a shop coat of aluminum primer which affords protection as well as a base for finish coats of any color.

* * *

Acid-resisting Alloy

A new alloy known as Hastelloy B has been introduced by Haynes Stellite Co., Kokomo, Ind. The alloy is primarily for service in equipment handling hydrochloric acid at all temperatures and concentrations. Composed of nickel, molybdenum and iron, it is said to be adaptable to castings, wrought parts, rolled plate and sheet, wire and welded tubing. Applications include agitator units, heating and cooling coils, pumps and pump parts, condensers, valves, pipe and fittings.

* * *

Flow Meters

A new 40-page catalog on flow meters is available for distribution by The Bristol Co., Waterbury, Conn.

* * *

Distribute Erie Line

Shields, Harper & Co., west coast distributors, have announced to Pacific coast service station operators and oil marketing companies the selection of the complete Erie line of gasoline meter pumps, and lubricating oil, kerosine and grease dispensing equipment, products of Erie Meter Systems, Inc., Erie, Pa.

The appointment was concluded after a thorough three-month investigation when L. R. Wiesland, president and general manager of the distributing company, visited the Erie plant in January. Stocks of pumps will be placed in the company's four stores on the Pacific coast.

Sells By Weight

When the Independent Lubricating Co., Topeka, began selling oil by weight, losses due to overfilling drums were eliminated, it is said. Overweights formerly averaged about two per cent, according to F. C. Noller, secretary of the company. The company is now using a Fairbanks dial type warehouse scale.

* * *

Graphite Surfaces

Utility of Graphite surfaces is the title of Technical Bulletin No. 270.1 just issued by Acheson Colloids Corp., Port Huron, Mich. The bulletin describes the properties of graphite and graphite films on various surfaces: metals, glass, and miscellaneous substances.

* * *

Rotary Pumps

Roots-Connersville Blower Corp., Connersville, Ind., has issued two new bulletins covering its line of rotary pumps. Bulletin 61-B10 describes and lists the new-type RF 3-lobe cycloidal pump designed to handle heavy liquids such as tar and asphalt. Bulletin 55-B10 covers the application of certain units as exhausters for priming the larger centrifugal pumps. Tables of relative volumes of air at different vacuums and cubic content of pipe are included.

* * *

Rust-Proof Paint

The Flood Co., Cleveland, is announcing a rust preventative which makes use of the closely adherent rust on steel surfaces. This rust is said to be the pigment when a coat of Penetrol is applied. No chemical action occurs between Penetrol and steel or rust, it is claimed, and the film dries hard but is elastic with the metal. Other paints can be applied over this surface and aluminum is recommended particularly. With aluminum, Penetrol can be used as both a priming vehicle and as a vehicle for aluminum, it is said. The company's booklet entitled "Rust" fully describes the action of the coating material.

* * *

Expansion Joint

The first piece of literature describing a new type "S" stainless steel, bellows expansion joint announced at the New York Power Show last December is now available from Foster Wheeler Corp., New York. These joints are designed for pressures up to 300 pounds per square inch and temperatures up to 750° F.

* * *

Activated Alumina

A booklet on Activated Alumina has just been released by the Aluminum Co. of America. It is a 40-page loose-leaf booklet containing information on properties, adsorptive efficiency, applications, and reclamation and reconditioning of oil. An appendix contains tables and charts useful in connection with gas and oil engineering.

WILZIP GASOLINE

65 To 80 Octane

Blended
to
Suit
Weather
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Build
Your
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With
High
Octane
Gasoline

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Four inch Red Seal Meter serving The Texas Company, Richmond, Va.

AT BUSY LOADING RACKS!

Metering gallon after gallon with precision accuracy is the job which this 4 inch Red Seal is doing,—and doing with the same dependability you will find at thousands of other Red Seal Metered loading racks.

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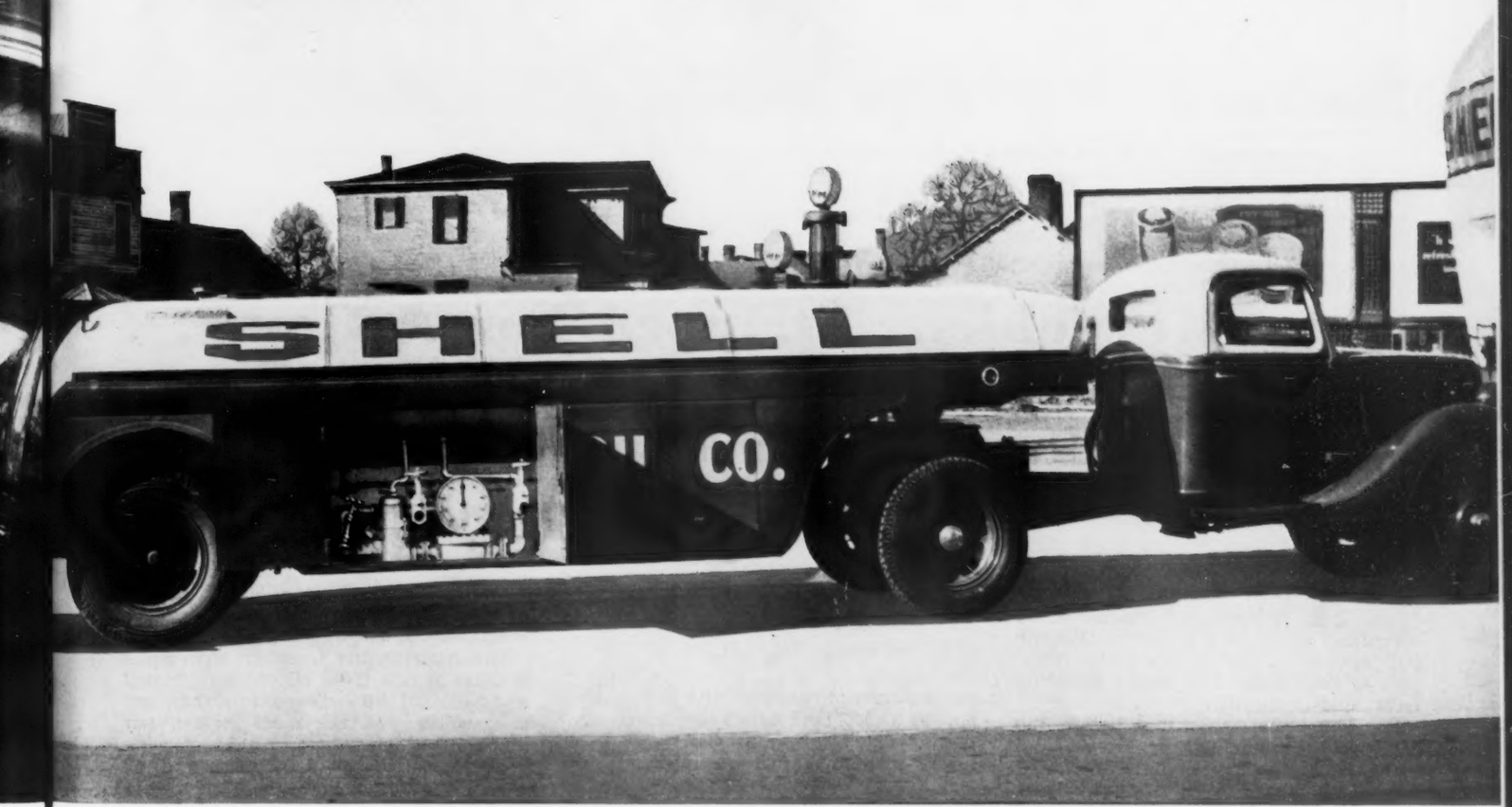

Quality Oil Co., Inc., Winston-Salem, N. C., say that by avoiding back hauls, this Red Seal Auto-Stop Meter is "effecting a daily saving of between five and ten dollars".

FOR ACCURACY BUYERS ACCEPT!

When trucks are equipped with Red Seal Meters, the buyer *knows* he is getting full measure,—a gallon received for every gallon paid for. What better way to please your customer, win and hold his good-will as well as his business?

SEAL METERS

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TANK TRUCK . . . BULK PLANT
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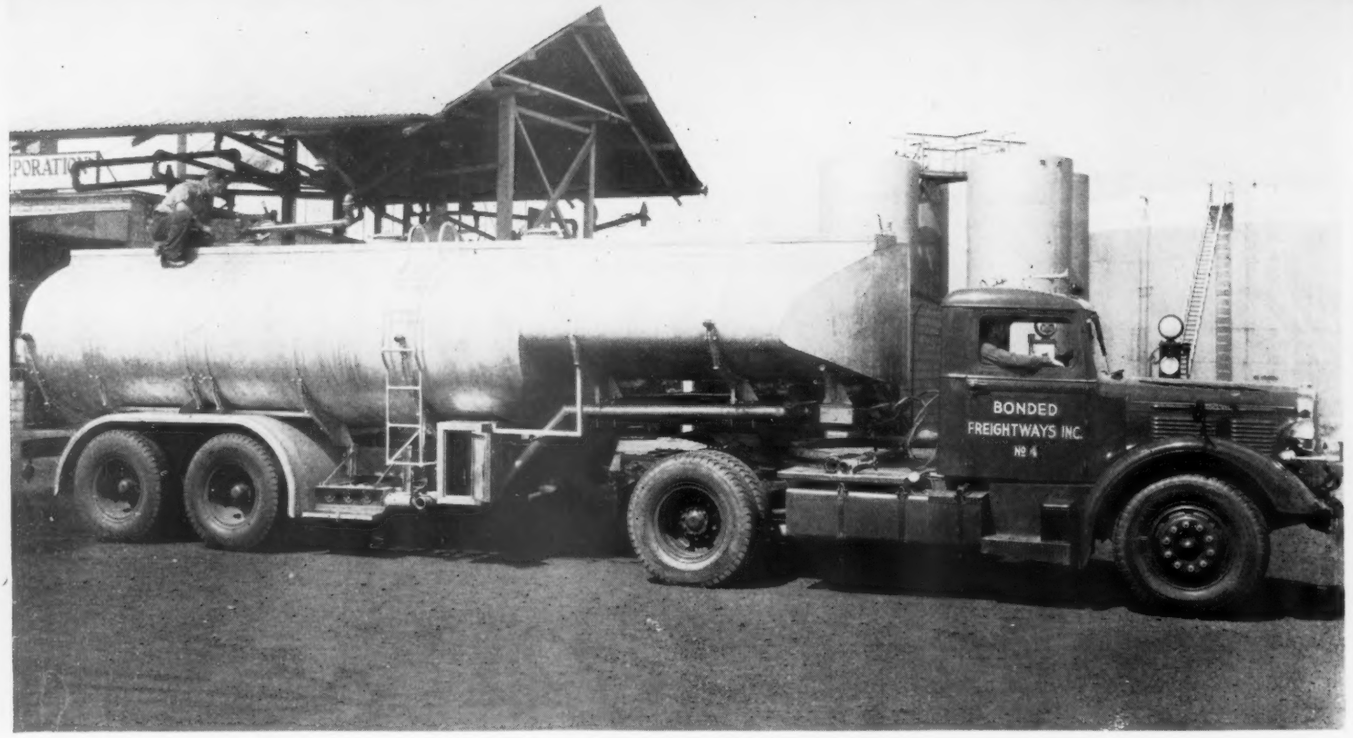


Both in appearance and capacity this motor transport for petroleum products bears a marked resemblance to its contemporary, the tank car

A Safe Vehicle, Stripped For Action—That's The Modern Transport Truck

By JOHN W. THOMPSON
N. P. N. Staff Writer

• • •

AN increasing number of oil companies are coming to realize that the bulk hauling of gasoline by motor transport is something that merits more interest and application.

For today, more than ever before, the transport operator has at his disposal trucks and auxiliary equipment varied enough in scope to fit any conditions under which his company functions.

Truck tractors, semi-trailers, straight trucks, four-wheel trailers, two-speed differentials, trailing or third axles for both trucks and trailers, multi-speed transmissions, diesel engines, lightweight truck tank material—all these and many more, offer the operator a variety of methods of approach to his individual problem in hauling. His skill in combining certain of these features to the best advantage to operate in the states in his territory is one of the primary limiting factors in the degree of success of his truck transport venture.

If you would have proof of the rapid growth of the motor truck as a bulk hauler of refined products, take the figures of five southwest refiners over the past five years. In 1932, these refiners transported the equivalent of 3082 tank cars of refined products by motor truck, and 30,254 tank cars by rail. By 1936, the picture had changed, with the equivalent of 19,596 tank cars being moved by truck and 22,599 by rail.

The percentage increase in this haulage by trucks for the 1932-1936 period was 535.8 per cent, while the decrease for rail haulage over the same period was 25.34 per cent.

Another representative southwestern refiner, in 1931 shipped 96,280,000 gallons of refined products by tank car, and none by truck. In 1936, the rail shipments had dropped to 67,920,000 gallons, and truck shipments were 25,092,499 gallons.

Restless state highway regulations, in the past, have been instrumental in retarding a rapid growth of transport trucking by oil companies in their own units, and have been one of the underlying reasons why contract haulers have made such phenomenal headway.

However, in recent months, there has been an increased interest by oil companies in considering their own units for this service. Some operators are of the opinion that the bottom has been reached in state highway limitations, and that they can now proceed with their transportation plans on a somewhat more permanent basis.

The head of the truck transportation division of one large oil company stated recently that he believed rail shipment of gasoline was the most logical, but that competition will force more oil companies into truck hauls. He also pointed out that conditions are now such that an oil company, in many cases, can haul cheaper with his own trucks than by letting a contract hauler do it. Bearing out this point, one oil company has shown it can save itself 50 per cent over the amount a contract hauler could save over rail rates.

Contract haulers and oil companies alike are finding that the most economical length of haul is about 150 miles. While individual rail rates in various localities will govern this figure to a large extent, it is believed that, in general, for any mileage above 150, rail transportation is cheaper. A few conservatives place the most economical truck transport mileage as low as 75 miles and there are a number of units whose round trip route is less than 50 miles.

One truck operator follows the rule that a truck transport must be able to save 20 per cent over the rail haul before it will be given consideration. Some

With a 5000-gallon load, this unit of the Republic Oil Refining Co., Pittsburgh, hauls from a terminal at Coraopolis, Pa., to four bulk plants within a 100-mile radius. This unit is on the road 24 hours a day, except Sundays, when it is put in the shop for inspection and repairs. Both tanks are made of aluminum

oil companies, however, say they will use motor transports as long as they get an even break with rail rates in transportation costs, because of the added factors in favor of trucking, such as greater convenience, time saving, smaller inventories necessary to carry and so on.

Transport operators are keeping a finger on the pulse of public reaction to bulk haul trucking, and highway safety is a primary consideration in the instructions to drivers and in the fabrication of the units. Safety, then performance, is the creed of the majority of operators.

Interstate Commerce Commission regulations on safe operation are followed explicitly, and few oil companies will issue hauling orders to contract truckers whose units have not passed the regulations set down by the National Fire Protection Assn.

While horsepower, weight, and many other factors directly influence the choice of a transport unit, an indirect, but nevertheless primary, influence on that choice again is public opinion. Operators insist upon "gradability" in their transports; that is, the ability of a unit to maintain a good road speed on a grade so as not to irritate motorists.

This "gradability" requirement is reflected in the growing demand for medium-duty trucks and truck-tractors, particularly in hilly country. In the more level territories the light-duty tractor unit with semi-trailer, aided by an additional driving or trailing axle and multi-speed transmission or differential, is finding a wide following. In such territories, a light-duty tractor pulling a 4000-gallon semi-trailer is not uncommon.

Principally because of public opinion, and secondarily because of state restrictions, the four-wheel trailer is losing favor. There are exceptions, of course, but conversations with well-informed transportation men definitely indicate that the tractor semi-trailer unit is the answer in the majority of cases where trailers are under consideration.

For bulk haul operations by truck the two-speed axle is proving to be profitable equipment, due to its ability to replace speed with power on the "loaded" trip and to diminish the power in favor of speed on the "light" trip. Although some truck operators endeavor to schedule their transport units in such a way that return trips, as well as out-going trips, will carry a payload, it has been estimated that about 90 per cent of the petroleum transports carry a payload for only one half of their round trip.

The tendency toward the elimination of the four-wheel trailer is having its effect upon the capacity of the semi-trailer and there are numerous evidences of ingenuity in expanding the payload capacities of these semi-trailer units.

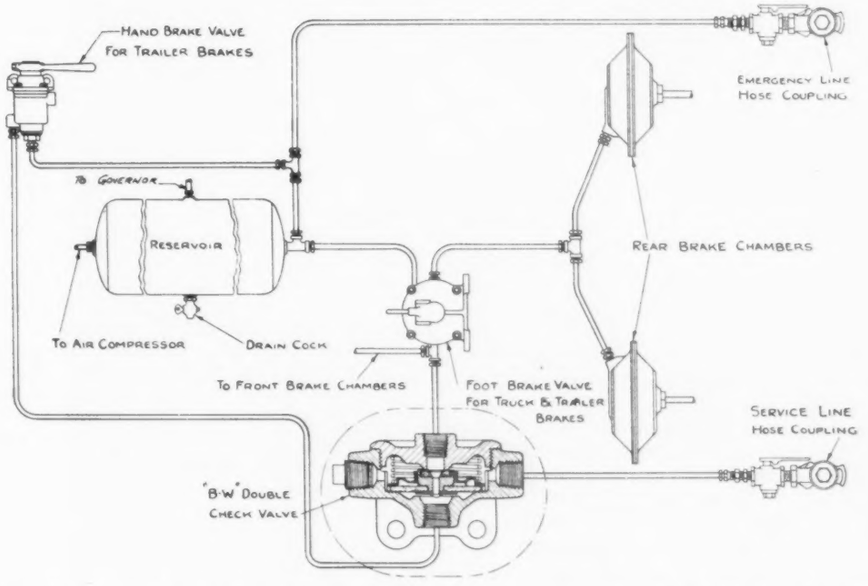
An example of this is the increasing use of the trailing axle on the semi-trailer unit, thus dividing the total weight between the axles and permitting a higher gross weight than if only one axle were used. The trailing or third axle is also popular on both tractor jobs and straight trucks, particularly on the lighter weight trucks around 1½ or 2 ton capacity where the third axle, by increasing the frame strength of the original chassis, adding two thirds to the tire capacity and approximately two thirds to the effective brake and axle capacity, enables this lighter unit to carry the same pay load as a larger truck of same make, costing from 15% to 30% more than the third axle equipped lighter unit. Users of third axle equipped trucks also point to added traction for the driving wheels, greater stability of the load resulting in less strain on the truck tank and, in some states, lower insurance rates.

The auxiliary or overdrive truck transmission is finding considerable favor among operators in hilly territory. This device is used to cut down engine revolutions while the vehicle maintains a high road speed, thus offering greater fuel and oil economy as well as cutting down the engine wear.

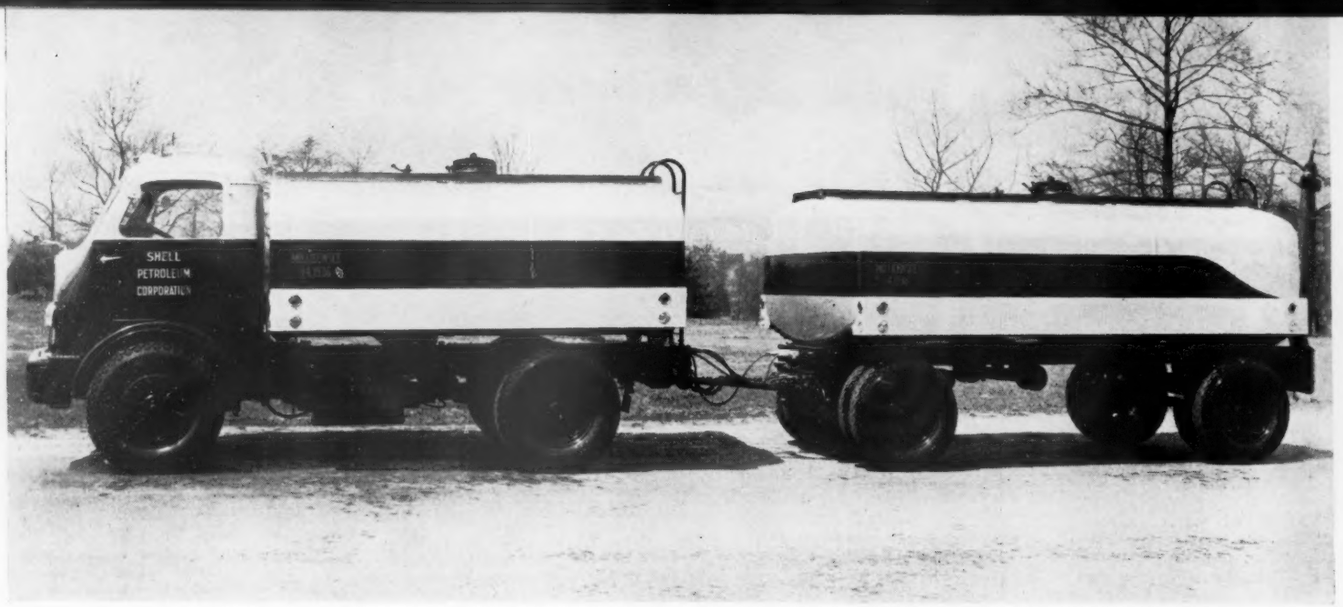
One such auxiliary transmission provides a higher ratio, or overdrive, to each of the four forward truck transmission gears. This gives an overdrive first, overdrive second, overdrive third, and overdrive high. The first three of these are all of lower ratio than direct or high, thus ranking better in pulling power than high gear.

The principal value of this overdrive lies in the fact that it splits the spaces, or steps, between the regular first and second, second and third, and third and high gears in the truck transmission. In other words it makes possible gears between high and third, third and second, and second and low.

Ever mindful that the transportation of payload is the primary function of the bulk haul truck, and that approxi-



One of the newer air brake developments provides for the independent control of trailer brakes, which offers the driver additional operating safety on steepgrades or slippery roads. This diagram shows a typical piping arrangement for independent trailer braking



This truck and trailer unit, with a combined capacity of 5150 gallons, makes six 55-mile round trips daily between Shell's Wood River refinery and St. Louis. The unit is constructed principally of aluminum, even to wheels and brake shoes. It is used principally for experimental purposes

mately every six pounds of excess dead weight represent the loss of a gallon of payload, operators are ever anxious to find means of transforming unproductive weight into productive capacity.

Truck tank builders have been active in this respect, and there are an increasing number who now offer a frameless semi-trailer job which, according to the estimate of one builder, will reduce the dead weight of the unit from 800 to 2000 pounds, depending upon its size.

Advances have also been made in fifth wheel construction, and one trailer builder has recently brought out a new fifth wheel design which offers a non-sway feature, as well as a ribbed construction which gives ample strength without excessive weight.

THE matter of weight saving cannot be adequately discussed without reference to light weight tank sheets. Observers are practically unanimous in their opinion that competition in bulk hauling by transport will force the adoption on a wide scale of aluminum and high tensile steel for tank material. Already these materials have demonstrated their economic soundness, in their ability to offer the truck operator increased payload without increased weight.

Truck tank fabricators report that more high tensile steel and aluminum transport jobs are now leaving their plants than ever before, and there is every indication that additional converts will be brought into the fold of light weight metal users as competition insists upon it.

Bolsters, bulkheads, frames and supports are now being given an intensive diagnosis in the laboratories of both the aluminum and the high tensile steel groups, with the object of determining means of still further lightening the truck tank structure.

An interesting example of just such an experiment is being carried on in the research laboratory of the American Rolling Mill Co., Middletown, O., a high tensile steel sheet producer.

Here it has been found that the proper type and location of truck tank supports may be instrumental in reducing the thickness of the sheet required, thus reducing the tank weight.

Tests were made in this laboratory with tin cans of various diameters and lengths, and filled with water. Supports were attached to these cans in different positions, and impact blows administered to the shell of the can through the supports. It was found that pronounced buckling of the can occurred when 120-degree supports were not located directly in the plane of the can end (bulkhead).

The buckling was found to be greatly reduced when 180 and 360-degree supports were used. The tests indicated that the placing of a 120-degree support directly beneath a stout bulkhead had the same effect as using a 360-degree support not in the bulkhead plane. These experiments would indicate that the tendency of a tank to buckle in service can be greatly reduced if it is made certain that the supports are placed directly beneath the bulkheads.

An outstanding example of the possibilities of eliminating excess weight on transport units is found in the experimental truck and trailer unit operated by the Shell Petroleum Corp. between St. Louis and the company's refinery at Wood River, Ill. This job, carrying 2175 gallons on the truck and 2975 gallons on the trailer, has a pay-fare ratio of 2.13, that is, it carries 2.13 pounds of payload for every pound of its dead weight (including wet weight).

This Shell unit, which is used as a road testing machine for various operations, including diesel fuels, had travelled 116,000 miles on the day this writer made a 55-mile round trip in it. The unit is on the road seven days a week, makes an average of 6.2 trips per day, and at the time of this writing it had only been out of service three days, two of which were made necessary by a delay in the delivery of parts.

This particular unit is made of aluminum from "head to foot". On the truck, the cab, including its foundation and superstructure, is made of aluminum. In addition, the following parts are also of this material: frame, spring brackets and shackles, steering column, pedal shaft brackets, brake shoes, wheels, tank, tank mountings, and valves and piping. On the trailer, practically the only parts that are not made of aluminum are the axles, springs, and brake drums.

The liberal use of aluminum in the diesel engine on this unit made possible a weight reduction of 672 pounds, which, in terms of added payload, represents over 100 gallons of gasoline. The following engine parts are constructed of aluminum: cylinder block and head, timing gear case, pump governor case, air intake manifold, and the flywheel housing.

Shell's active automotive division is now planning still other means of reducing weight on future transport units. Among these are axles of high tensile steel forgings, and the use of magnesium steel for rails and rods. Plans call for the next unit to be equipped with aluminum rims, as well as wheels, which will represent a weight saving of 420 pounds on the rims alone.

THE Shell job, described above, rode on the same set of tires for 100,000 miles, an enviable mileage made possible by a daily check on air pressures and by a plan of rotating the tires from side to side, from front to rear, from inside to outside on the dual wheels, and from driving wheels to trailing wheels.

Tire manufacturers have sensed the growth of highway transportation in general, and at least one has developed a tire that is especially designed to stand up under the high temperatures developed in long distance operations at sustained high speeds.

Indicative of the advanced thought in the design of transport trucks is a 4200-gallon semi-trailer recently completed by a truck tank fabricator. The unit is equipped with an electrically driven centrifugal motor pump set compactly in the side of the unit, and having a 100-foot cord which can be plugged in at the unloading point for power take-off.

This manufacturer explained that the gravity dump through the unit's three-inch lines would be at a rate of about 100 gallons per minute, this pump will boost that rate to 175 g.p.m., thus saving considerable unloading time. It was explained, also, that it is often uneconomical to rely upon bulk plant pumps to unload the truck, as many of these have only a 75-g.p.m. rating, and here again the truck would lose time. The pump and motor weigh approximately 250 pounds.

The skirting on this particular unit is

Be the talk of the Town!

Come on up here and look at the quick opening, sure tight fill caps and the new paint protecting anti-splash rib rail!
Boy! Look at the chromium plated hand rails—good and strong!
Whee! These are really smooth compound curves!
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Streamline running lights, too!
SOCONY-VACUUM OIL CO. INC.
WHITE EAGLE DIVISION
Look here! Concealed hinged bucket box door! Advertising emblems fit neatly!
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Mobiloil
Look at it! It's the most beautiful thing on wheels!
And roomy package carrying cabinets, too!
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Oh ho! Here's something entirely new, quick drain features, no more kinked hose!

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For gasoline only ☐ Combination fuel and gasoline ☐
To be mounted on: Make of truck .....
Model ..... Wheelbase .....
Quote by mail ☐ Send representative ☐

Name .....
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A *Brownie* TANK

Custom built and constructed to give satisfaction. Made of high grade materials which lengthen the life of the tank. It has a low load, is compact, has less weight per gallon, adjustable frame, rib rail that catches splash and is ventilated, and many other features which are too numerous to mention. Send us your inquiries, which will receive our prompt attention.

BROWN STEEL TANK CO. 2943 S. E. 4th Street NOT AFFILIATED **MINNEAPOLIS, MINN.**
GEO. A. BROWN, GEN. MGR.

Eight compartments are built into this 4800-gallon transport unit of the Pure Oil Co. The tank is constructed of high tensile steel. Three-inch piping is used throughout the unit, and manifolding is on the right side with one common gravity outlet. Three-inch emergency valves with unit control are located in the box on the right side in the skirting

bolted on, thus facilitating the replacement in case of damage or accident. Hose tubes, which are enclosed under the walk-ways, are removable so that they can be taken out to remove the hose in case they are rammed while the hose is in place.

This unit is equipped with a meter, which has a ticket recording attachment, so that deliveries may be made at any time of day or night, regardless of whether or not there is an attendant at the delivery point to check the dump. The meter is enclosed in an aluminum case to reduce the weight.

The newer transport units, in the majority, are equipped with three-inch lines, with outlets on both sides of the tank and in some cases in the rear as well. Four-inch lines are found in a few instances, but here the weight of valves and fittings begins to become a controlling factor.

Although meters have not yet made an appreciable dent in the transport picture, considerable thought is being given to this equipment, particularly in those territories where products are hauled by truck direct from the refinery or terminal to the service station.

One of the traffic men of a large oil company recently stated that the only reason oil companies have not begun to haul direct from refinery and terminal to service station is because "they have been too busy getting the cream of the profit". This man estimated that such an operation would save ¼-cent per gallon, but that it would not entirely eliminate a bulk plant, because storage would be needed for other products.

Hauling direct from terminal to service station has limitations, according to some observers. In many communities local restrictions limit the choice of routes which a large transport might use. Pittsburgh is an example, where local laws permit nothing higher than a 1500-gallon load of gasoline to use the city streets.

In event there is a swing to the terminal-to-station movement on a large scale, the combination tank and stake truck is in a happy position. This type of unit, already found in some use in the southeast and middle west, is designed with a flat top tank shell which serves as the floor of the stake section of the truck. In addition to carrying gasoline in its lower quarters, it can transport sizable quantities of package goods, accessories and other station items.

Neither is motor transportation limited to gasoline and package goods. For more than one company is considering the possibilities of hauling bulk motor oils by motor transport.

All through the development of the tank truck for long distance hauling, compressed air has been in a large measure responsible for the progress that has been made. The air brake has made possible and safe the use of transports that otherwise would be too unwieldy to operate on today's congested highways.

Since the air brake, many other air-operated devices have been introduced. For example, a means is now afforded of separate control of trailer brakes which finds its greatest usefulness in handling trailers on steep grades and under wet and icy road conditions. An air operated limiting control valve is available which allows the pressure on the front wheel truck brakes to be diminished and to be increased on the rear wheels. This also offers a measure of safety to the driver when traveling on bad roads.

An air-operated gear shift, providing remote control of the transmission, and the air-operated clutch, both offer the driver relief from muscular fatigue.

A special automatic emergency air brake has been developed which will result in an automatic and positive application of the rear truck brakes and of all trailer brakes.

A low-pressure indicator, normally set for 50 pounds, has also been developed, which warns the driver with a buzzer sound if for any reason there should be an abnormal depletion of air pressure in the truck's braking system.

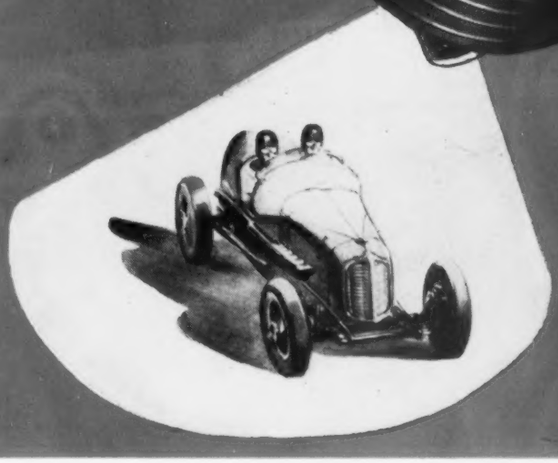
The diesel engine continues on its controversial way, finding, in the field of heavy-duty long haul operations, probably more followers than in any other division of automotive transportation. Low fuel cost continues as the principal talking point for diesels, while opponents at the same time bring up the disadvantages of higher maintenance costs and poorly standardized fuel conditions.

One of the largest truck operators on the west coast, operating both diesel and gasoline-powered equipment, is of the opinion that, even though diesel fuel prices advance to the point where the diesel engine's economic advantages disappear, the operating advantages are of

Where road restrictions materially limit the transport's length, the cab-over-engine type of construction makes possible a considerable increase in payload capacity without increasing the overall length of the unit. The cab-over-engine tractor is growing steadily in popularity among transport operators. This is a 4250-gallon unit owned by the Hambleton Terminal Corp., Buffalo, N. Y.

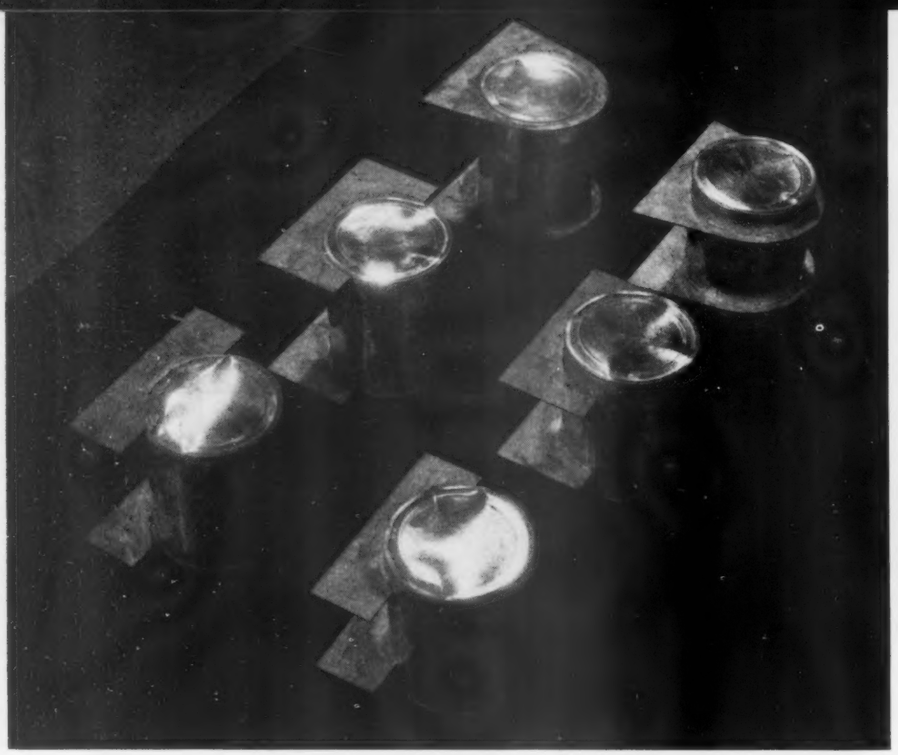
CHAMPIONS WIN *Again*

14TH *Consecutive Victory* AT INDIANAPOLIS



Wilbur Shaw, driving his Champion-equipped Gilmore Special, won the 1937 Indianapolis 500-Mile race at a record-breaking speed of 113.580 miles per hour. The first ten cars to finish used Champion Spark Plugs.

SELL THE SPARK PLUG CHAMPIONS USE



The results of tests made on quart-sized tin cans, filled with water, to determine why and where buckling occurred. The tests, made in the research laboratory of the American Rolling Mill Co., showed that considerably less buckling occurred when 360-degree supports were used than when 120-degree supports were employed. In these tests the impact was applied through the supports eight times, and each time it was sufficient to throw the loaded can about 12 feet in the air

such value that the use of this equipment would continue on all line hauls.

The ability to move heavier loads at higher speeds over grades, additional power, shorter time schedules between consuming centers where competition between rail and truck are keen, are included by this company among the operating advantages of diesel equipment.

Figures from this company's cost sheets show that, if the cost of diesel fuel increased 347 per cent to the same cost as gasoline, there would still be a saving of almost 50 per cent in the fuel cost of diesel operation.

Propane fuel has found few customers in the truck field, due to the fact, for one reason, that distribution of the fuel is not general enough. An interesting use of propane in connection with trucking has been developed by a Detroit manufacturer, however, who has designed a refrigerating unit for use in meat packers' trucks and other units carrying perishable goods. The propane is led under its own vapor pressure to the refrigerating unit where it expands to produce the cooling effect and moves from there to the engine where it is burned as a fuel. Thus the propane serves two purposes—first, a refrigerant, then a fuel.

One large oil company has just put into service in Michigan six trucks which operate on propane, and which also deliver the fuel to customers. The truck engines are of the type which were designed to operate on an alcohol blend fuel in South Africa, and have a compression ratio of 7 to 1. An official of the company operating these units is of the opinion that propane is not yet practical as a truck fuel.

One of the newer developments in transport trucks is found in a 6300-gallon truck and trailer train operated by the Kayser Transport Co., Denver, Colo. This truck carries a lightweight refrigeration unit which efficiently air-conditions the cab, maintaining a comfortable temperature of 74 degrees for the driver. The two-cylinder compressor is driven by small separate gasoline engine.

Sulfur gas is used for the cooling element and the cooling coils are located between the seats of the driver and rider at the back of the cab. A fan pulls the air off the floor and over the coils.

A safety feature of this transport unit is a powerful arm, hydraulically operated, which is forced down into the pavement should the unit start slipping backward on slippery pavements or because of brake failures. A special type of wet air cleaner has been designed to protect the engine from dust storms through which this unit must sometimes operate.

The list of developments in the petroleum motor transport field seems endless. There is the cab-over-engine type of truck and tractor, which is gaining so much favor, due to its conservation of over-all length to permit the addition of more load-carrying capacity.

There is the trend away from skirted units, brought on by the desire to "skin down" every excess pound of dead weight to make room for more pay load.

And there is the fact that petroleum transport units, as well as the business of operating them, are becoming decidedly specialized. That fact was indicated at the mid-year meeting of the American Petroleum Institute at Colorado Springs a few weeks ago by J. F. Winchester, of the Standard Oil Co. of New Jersey, when he said:

"Organized motor truck operation is becoming more a fact than heretofore and the general results are the exclusion of so-called individual or irresponsible operators and a gradual tendency toward transportation combinations which as a whole come under better control, and this trend should establish better records in the future provided it continues".

He referred to safety, which is fast becoming the transport operator's first law.

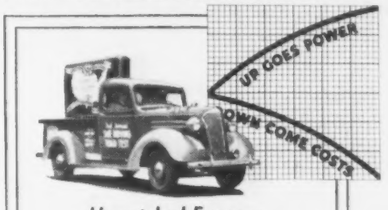
A unique diesel powered, high tensile steel, gasoline transport train hauling 6300 gallons net payload. The front tank carries 2650 gallons net gasoline load and 200 gallons of diesel fuel. The trailer tank carries 3725 gallons in a single compartment. A new type of bus diesel engine, built by Cummins, powers the vehicle. This unit is used by Kayser Transport Co., Denver, to transport gasoline from Kansas refineries to the larger cities in Colorado. The operating schedule calls for a round trip of 1000 miles in 36 hours. A small refrigeration unit on the truck provides air conditioning in the cab, maintaining the temperature at 74 degrees

CHEVROLET TRUCKS

Truck Users in the Oil Industry are reducing their haulage costs with famous Chevrolet economy—with bigger load space—and with the greatest pulling power of any truck in the lowest-price field. Chevrolet Trucks are the only low-priced trucks that offer all of the important features listed below. Ask your Chevrolet dealer for a demonstration.

General Motors Installment Plan—monthly payments to suit your purse.

CHEVROLET MOTOR DIVISION
General Motors Sales Corporation
DETROIT, MICHIGAN



Unmatched Economy Proved in 10,244-Mile

"RIM OF THE NATION" TEST RUN

With Half-Ton "Economy Model" Pickup—1,000-Pound Load

Location of Test	'Round the Nation, Detroit to Detroit
Distance Traveled	10,244.8 Miles
Gasoline Used	493.8 Gallons
Oil Consumed	7.5 Quarts
Water Used	1 Quart
Gasoline Cost	$101.00
Gasoline Mileage	20.74 Miles per Gallon
Average Speed	31.18 Miles per Hour
Running Time	328 Hours, 31 Minutes
Gasoline Cost per Mile	$.0098
Average Oil Mileage	1,365.9 Miles per Qt.
Total Cost of Repair Parts	$0.73

These records have been certified by the A.A.A. Contest Board as being officially correct.

PERFECTED HYDRAULIC BRAKES — NEW HIGH-COMPRESSION VALVE-IN-HEAD ENGINE — MORE LOAD SPACE — IMPROVED LOAD DISTRIBUTION — IMPROVED FULL-FLOATING REAR AXLE WITH NEW ONE-PIECE HOUSING (on 1½-Ton Models) — NEW ALL-STEEL CAB — PRESSURE STREAM LUBRICATION

"MORE POWER *per gallon* CHEVROLET **LOWER COST** *per load"*

The greatest hot weather pumping aid ever invented

MORRISON

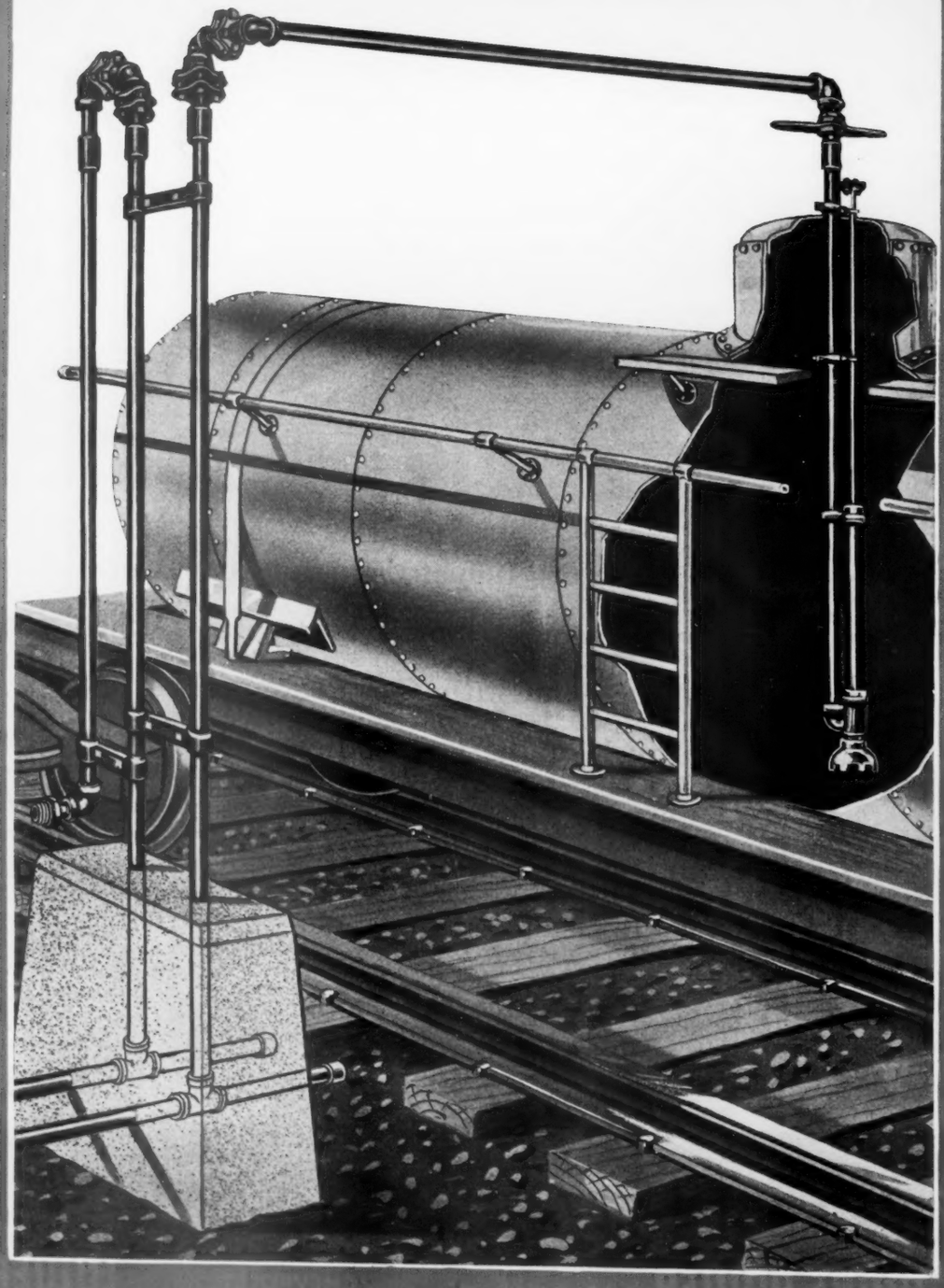


Illustration at right shows in a simple, understandable way just how the New Morrison Tank Car Unloading Valve works. The appliance is a simple, double valve. By closing one side the gasoline from the top is unloaded first. After one-half the car has been unloaded the other portion of the valve is permitted to operate and the remainder of the gasoline is taken from the bottom. Inexpensive to buy—easy to install—simple to operate — effective at all times.

Pays for itself on first three or four cars unloaded

TANK CAR UNLOADING VALVE

Draws Off Warm "TOP GASOLINE" First

Prevents Vapor Losses • Eliminates Unloading Trouble

Here is Morrison Engineers' answer to your problem of unloading tank cars during the hot summer months—a simple, unfailing valve that draws off the warm gasoline from the top of the car FIRST.

This remarkable new development just reverses the operation of the ordinary unloading rack. It saves time—it saves gasoline—it prevents vapor loss.

The New Morrison Tank Car Unloading Valve is so reasonable in cost that it will pay for itself on the first three or four tank cars unloaded. Every bulk plant regardless of size cannot afford to be without these time and money saving valves. Incidentally, we invite you to write for New Morrison Catalog and Prices on all lines of modern, soundly engineered, bulk plant equipment and fittings.

MORRISON BROTHERS CO.

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DUBUQUE, IOWA

SEND FOR COMPLETE DETAILS AND PRICES NOW!

MORRISON BROTHERS CO.
Oil Equipment Headquarters
Dubuque, Iowa

The New Morrison Tank Car Unloading Valve looks like a real proposition to us. Without obligation, we would like to receive complete information and prices at once.

Name _____

Address _____

A 5100-gallon semi-trailer tank truck that is privately operated but carries the oil company's color and name. The front end of the tank holds 190 gallons of gasoline for the truck fuel supply. The three compartments hold 2560, 1520 and 1020 gallons, from front to rear, and are connected to two 2½-inch meters. It is possible to unload the three compartments in 45 minutes. This equipment has casinghead domes so that product can be handled and thereby raise the load factor

Trucking Direct to Stations Is Growing in California

By **JACK N. WESTSMITH**
N. P. N. Staff Writer

• • •

BULK movement by truck of petroleum products on the Pacific Coast actually got its start more than a decade ago. It was the logical outgrowth of an acute need on the part of oil marketers for cheaper and faster transportation to meet the growing demand for their products over a wider territory. This expansion into areas some distance from the bases of supply could not be fully realized in the face of unyielding high rail tariffs and exceptionally poor rail service.

Truck transport service offered a solution to this problem with lower rates and a more flexible method of operation. Even though the "for hire" trucker is now under jurisdiction of the Interstate Commerce Commission and the various western state railroad commissions and must adhere to rates prescribed for refined petroleum products on a parity with rails, he continues to handle upward of 60 per cent of the so-called bulk movement of these products from California points of supply.

In the early days of bulk truck transportation on the west coast, some oil marketers attempted to operate their own fleets of transport units between refinery or terminal points and bulk plants.

However, even the largest supplier did not have the bulk movement necessary to keep this larger type of equipment in service a sufficient number of hours out of the day, and days out of the month and year to make the operation economically profitable.

The result was that individuals, often affiliated with the oil company, started a tank line to handle that supplier's products. From here the development was logically expanded to handle shipments for other marketers — all as a means of keeping the equipment moving.

The railroads suffered the loss of the major movement of gasoline in California because of rates that were originally too high and because of service that was originally unsatisfactory and indifferent. Tom, Dick or Harry will tell you about the old days when it took 10 days to ship a tank car of gasoline by rail from a Los Angeles Basin refinery to the Imperial Valley — a distance of about 250 miles. Temperatures in this area, where most of the early fruits and vegetables are grown, range upward of the 100 degrees most of the year and, when the tank car arrived at its destination, evaporation losses often amounted to 500 gallons.

Today a tank truck and trailer unit will load at the same refinery and, traveling by night, will deliver the load in about 12 hours and with no loss. Needless to say, the rails have speeded up their service to meet this competition. Delivery time is now approximately the same for both types of equipment on long hauls.

On the Pacific Coast truck and trailer equipment has proven particularly advantageous for the long haul — in excess of 75 miles — and improvements in design and materials have favored the development of combined units capable of carrying nearly 6500 gallons and yet not exceeding the highway gross weight limits.

To points off the rail, the trucker plays a most important part in the long distance, bulk movement of petroleum products, through making deliveries to mines, sheep ranches, logging camps and even to service stations, in addition to bulk plants.

Deliveries direct from the refinery or marine and pipeline terminals to large retail outlets have increased in recent years and experts believe future operations will see further expansion of this development. Where consumption justifies, 10,000-gallon underground storage tanks at these stations will accommodate

NAME YOUR TYPE OF TRUCK

White BUILDS IT

to do more and earn more for you at lower cost

The outstanding preference of petroleum producers and marketers for White Trucks comes from records for dependability and low maintenance and operating costs that have never been matched.

A list of White fleet users in every branch of the industry reads like a "who's who."

From the new low priced White Model 700 through the sensational "C. O. E." models to the largest super-heavy-duty units . . . White builds the *right* unit for every job . . . the most complete line on the market.

Modern streamline style, greater economy, lower maintenance, surplus power, exclusive safety features, built-in White Quality in every part...you get them *all* in Whites. See your White Branch or dealer or write

THE WHITE MOTOR COMPANY • CLEVELAND

For economy, dependability and streamline style, the new low priced White Model 700 is first choice of marketers. This unit, operated by O. F. Zurn Co., Philadelphia, shows the "deluxe" appearance that can be achieved with a relatively inexpensive body.

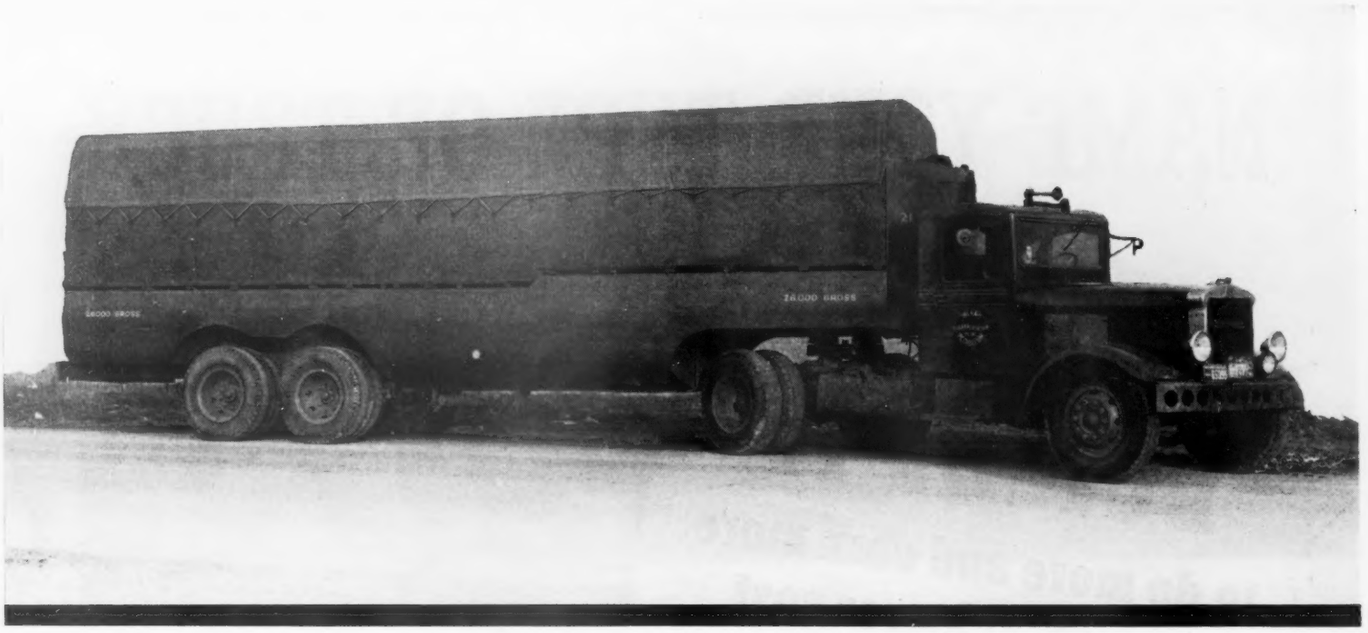
This White Model 704 is working for General Petroleum Corporation in the Wilmington (Calif.) field. This new field is a regular beehive of Whites.

(Left) One of seven White Model 712s doing an outstanding job for Western Geophysical Co. The unit shown recently drilled a 6-inch hole 1153 ft. in a single day.

•

(Below) In the conventional field no truck has more "eye-appeal" and advertising value than the new Whites. Model 720, shown, is operated by Hygrade Oil & Fuel Corp., Buffalo, distributors of Gulf products. Gulf, also, has been a prominent operator of a large White fleet for many years.

Shell Petroleum Corp., St. Louis, are among many marketers who know how well White's "Cab-Over-Engine" models fit their needs. The short over-all length of this White Model 805 gives remarkably easy handling in traffic and narrow places. And for "rolling billboard" advertising value . . . look at that job of streamlining!



Gasoline on the out trip and apples on the return is the reason for this double duty truck. The lower part of the body is a 4200 to 5000-gallon tank, which is decked over with a flat-bed for hauling package goods or crated farm products. The truck or tractor chassis on the smaller unit weighs 9450 pounds, the trailer 13,020, the top body 1900 pounds and the payload 25,630 pounds, which makes up the 50,000-pound road limit allowable

a 6500-gallon load and provide for an adequate supply at all times.

This feature has kept down investment in large bulk plants and in facilities for redistribution of products. This ability of the direct haul to eliminate double handling is one factor contributing to the renewal of interest on the part of some oil companies in equipment designed to operate over comparatively short hauls between supply points and bulk plants or service stations. Oil company operation of such equipment as a part of its regular fleet is indicated.

Following the sanction by the California Railroad Commission in 1936 of higher rates on movement of refined petroleum products within the state, which, in effect, established the same rates for both rails and trucks, the oil companies looked into the matter of operating their own equipment in making part of this bulk delivery between supply points and sub-stations.

While it is looked upon as still too early to predict a definite trend in developments toward this end, several suppliers are experimenting with semi-trailer units with capacities of 4000 to 4500 gallons. Experience of California marketing companies to date has demonstrated that this large capacity equipment is capable of providing fast economical transportation and yet is extremely flexible in effecting distribution to congested areas, where a truck and trailer unit would encounter difficulties.

At the same time, while it appears to be the answer to the traffic manager's search for means of speeding deliveries between refinery or terminal points and bulk plants, it is also adaptable to direct service from supply depots to retail service station outlets. Truck and trailer combinations are not generally used in making deliveries to retail outlets—they are too cumbersome to handle easily in a restricted space and there is the ever-present fire hazard.

The semi-trailer is finding growing favor for this type of service. A short wheel-base tractor, equipped with a heavy duty motor, is used in combination with a large capacity trailer tank. The tank, with two to four compartments is fully metered as an aid to delivery of whole or partial dumps, although the equipment finds its greatest utility in serving large gallonage stations.

One Pacific Coast company is operating a fleet of 4200-gallon, four-compartment units, with capacities of 620 gallons in the front compartment, 650 gallons in No. 2, 1235 gallons in No. 3 and 1840 gallons in the rear section.

The metering equipment consists of four units—two 2-inch for the smaller compartments and two 25-inch meters for the larger. Dual tires are standard on the two trailer axles and the rear tractor axle. The steering wheels are single. Tire sizes are 9.75 by 20.

Carrying out this trend toward greater use of the semi-trailer transport equipment, one California marketing company is considering the addition of several 4600-gallon units to its fleet. These would also have four compartments and would be fully metered.

The additional payload will be possible through improvements in design and by the use of high tensile steel in construction of the trailer frame. This latter item alone will account for a saving of approximately 1000 pounds, as compared with use of mild steel, and will permit an added payload capacity of about 160 gallons of gasoline.

The tank plans call for high strength steel, 3/16-inch in thickness, which will give it a weight of about 6000 pounds when empty. Total weight of the payload and tank combined is placed at 35,125 pounds.

The trailer will weigh 6400 pounds and the tractor, with cab, fuel and water, 9800 pounds. This results in a total gross weight for the entire vehicle when fully loaded of 51,700 pounds. Allowable weight where used on California roads, is 52,000 pounds for this type of equipment.

Fire protection and prevention regulations of Los Angeles are particularly inflexible in the matter of specifications governing portable truck tank construction. Not less than 3/16-inch steel can be used where the volume exceeds 3000 gallons. This ruling limits the dead-weight saving on tanks constructed for use in this area.

However, where less drastic regulations take into account the greater strength of high tensile steels, a 10-gauge material is used to advantage and with perfect safety. This permits a reduction in dead weight of a quarter of a pound per square foot of steel which, in construction of a 4600-gallon tank, would amount to approximately 900 pounds, or an increase in payload capacity of nearly 150 gallons.

Best results have been obtained with over-powered, rather than under-powered, engines on these semi-trailers. One operator uses a 401 cubic inch displacement motor, rated at 110 horsepower at 2300 r.p.m., with a maximum torque of 296 foot pounds at 800 to 1600 r.p.m. The job is six cylinders with a 4 and ⅛-inch bore and a 5-inch stroke.

A larger motor for use in this equipment under severe conditions has a 450 cubic inch displacement and develops 125 horsepower at 2300 r.p.m., has a 5 and ⅜-inch bore and 5-inch stroke. It develops a maximum torque of 340 foot pounds at 800 to 1200 r.p.m.

Dual performance rear ends are used and over-drive transmissions provide 12 speeds forward and three in reverse. The additional power afforded by this equipment permits flexible and economical operation of the semi-trailer transport where speed and power are equally important.

Recommended tire sizes are 9 by 20 minimum, with general practice dictating 9.75 by 20 or 22. Careful checking of tires for cuts and bruises, and maintenance of air pressure is combined with a routine

HAULS MORE-SAVES MORE

GMC design is the result of cumulative experience—from decades back. For instance, GMC frames—the backbone of the load—are metallurgically strong without being uselessly heavy; GMC engines have a high ratio of pulling power to capacity rating; GMC axles, springs, wheels and brakes are preponderantly strong! And GMC drivers are protected by all steel cabs affording wide angle driving vision and unusual comfort features including healthful ventilation. Besides this, GMC's are smart looking. These features save upkeep cost, increase advertising value, pyramid profits—*especially with GMC prices so low!*

GMC

Three Useful Body Styles—open express, screen-side express, and stake—make this the most adaptable oil trailer on the market. Built by truck men and built *like* a truck! *Write for colored descriptive booklet.*

Time payments through our own Y. M. A. C. Plan at lowest available rates

GENERAL MOTORS TRUCKS & TRAILERS

GENERAL MOTORS TRUCK & COACH • DIVISION OF YELLOW TRUCK & COACH MANUFACTURING COMPANY • PONTIAC, MICHIGAN

shifting of rubber on the vehicle to greatly increase the tire mileage.

Semi-trailers of between 4500 and 5000-gallon capacity have been operated by contract haulers on the Pacific Coast but recently the trend has been to replace this equipment with truck and trailer combinations. Where the semi-trailer tank truck appears to be the answer to the marketer's bulk transportation problems, most commercial tank lines look to the greater capacity possible with truck and trailer.

A possible development along these lines is seen in equipment operated by Inland Petroleum Transportation Co. out of Seattle, Wash. Combination tank and flatbed units are used in service between marine terminals in Seattle and inland points. Inland operates two different sizes in this semi-trailer equipment. The larger unit carries 5000 gallons of gasoline, weighs 27,150 pounds empty and has an overall length of 44 feet. The allowable gross weight under the Washington state law for this type of equipment is 60,000 pounds.

THE smaller equipment has a capacity of 4150 gallons of gasoline, an empty weight of 24,150 pounds, is 42 feet in overall length, and must meet an allowable gross weight highway limit of 50,000 pounds when loaded.

Where fuel oil or diesel oil is hauled, the quantity that can be loaded is decreased by the heavier unit weight of these commodities. The maximum load which the units can handle on the return trip is 33,000 pounds for the larger unit and 26,000 pounds for the smaller. The return load usually consists of fruit, vegetables, and other farm products.

Occasionally these trucks leave Seattle with less than the full tank capacity of bulk freight so that package goods may be carried in the van body on top of the tank. Total weight of the load, however, must not exceed the above limits.

Filling through two spouts, some bulk plant racks and some refinery racks will load a 6000-gallon truck and trailer unit in 15 minutes, including checking. In other cases, however, the loading time on the two tanks is nearer an hour.

It is estimated that loading and unloading operations on a 3000-gallon unit will take 90 minutes, on a 4500-gallon unit 125 minutes, and on a 6000-gallon unit 150 minutes. Where improved facilities are available at both ends of the journey the 6000-gallon equipment can complete both operations in about 90 minutes.

Unloading equipment on the truck is an important item. As a general rule, the 6000-gallon truck and trailer is equipped with 3-inch piping and hose. The tanks are one-compartment affairs and, since no split dumps are made, metering equipment is not provided.

Another development in behalf of speed in unloading is the use of 5-inch internal valves instead of 3-inch valves. One commercial trucker finds it possible to save 20 minutes a load with the larger valves. His experience has been that the 2½ or 3-inch pumps for unloading at the bulk plant will pull the liquid faster than flow through a 3-inch valve will permit. This breaks the suction and necessitates priming. In operation the 5-inch valve empties into a 4-inch reduction joint and then into the 3-inch outlet pipe.

Major improvements are being made by several California oil companies in bulk handling facilities. General Petroleum Corp. is remodeling its gasoline storage handling and delivery facilities at the Vernon refinery to provide faster and more efficient operation.

Loading racks at this plant serve retail trucks operating in the Los Angeles territory and are the main bulk loading stations for shipments to sub-stations in the southern California and Arizona territories.

This remodeling program calls for a rearrangement of facilities from one end to the other. The gasoline piping and pumping systems will be altered to permit loading of trucks and truck and trailer units direct from the main storage tanks. This will eliminate rehandling of the products through gauge tanks—the former practice.

Instead of the tank gauging method of checking deliveries, the racks will be fully equipped with meters. One rack which will serve trucks supplying the retail trade will have four spouts with a meter on each. This rack will handle regular and third grade gasolines and will have a runway along each side.

Six spouts and meters will be spaced on the wholesale rack—three on a side—so that truck and trailer assemblies can be loaded simultaneously. Three grades of gasoline will be handled here.

A 3-inch meter will be installed for each loading riser. The meters themselves will be placed under the racks and provided with extended dial arrangements to permit easy reading by the operator on the loading platform. The racks will be redesigned to accommodate this meter installation.

At the same time the loading platform will be elevated to a height of eight feet above grade as an aid to safe and convenient loading of all trucking equipment. A special drop type platform will be provided on each side of the main loading platform so that the operator can step directly onto the tank top. These platform construction details are finding considerable favor with Pacific Coast operators.

Provision is also being made for a special pressure control and auxiliary push button remote control arrangement on the pumping system as a means of giving uniform discharge rate and control of the pumping operation.

Gasoline piping in this remodeled layout will be 8 and 12-inch on the suction side and 6-inch to truck and tank car loading racks. Risers at the rack will be 4-inch, reduced to 3-inch at the point of discharge. A delivery rate of about 300 gallons per minute will be possible through this meterized system. Submerged loading has been used at this plant for some time, but the modernized facilities are expected to further minimize loading losses.

Benefits accruing to the company upon completion of this construction program will include a substantial reduction in gasoline evaporation and handling losses, reduction in waiting time for trucks through increased delivery rate, and more efficient handling of deliveries to transport equipment and with a greater safety factor.

Trucks have come in for perhaps more than their share of laws governing their operation on the Pacific Coast.

The California motor vehicle code, as amended in 1935, establishes certain maximum speeds for pneumatic-tired vehicles. Trucks alone or with semi-trailers having a gross weight of 25,000 pounds or more are permitted a speed of 30 miles per hour loaded and 45 miles per hour empty. Truck and trailer units must observe a 25 m.p.h. maximum speed at all times.

Regulations also specify four tail lights on the trailer and two on the truck; four side lights on both truck and trailer and two reflectors on each light. The combination unit must carry three flares—operators usually carry four—to warn motorists in case the truck stalls on the road.

Two red flags and two "truck stalled" signs are also part of this emergency equipment. A 2½-gallon foamite and a 2-quart pyreene fire extinguishers are other "musts" in the safety equipment.

All but the front wheels are equipped with brakes, which are vacuum on the truck and air-actuated on the trailer as a general rule. If the air line to the trailer breaks, a safety valve sets the brakes on all six wheels of the trailer. This is true whether the trailer breaks loose from the truck or the air line springs a leak.

SCHEDULES published by tank truck operators in accordance with their operation under the Interstate Commerce Commission, effective November 24, 1936, provide:

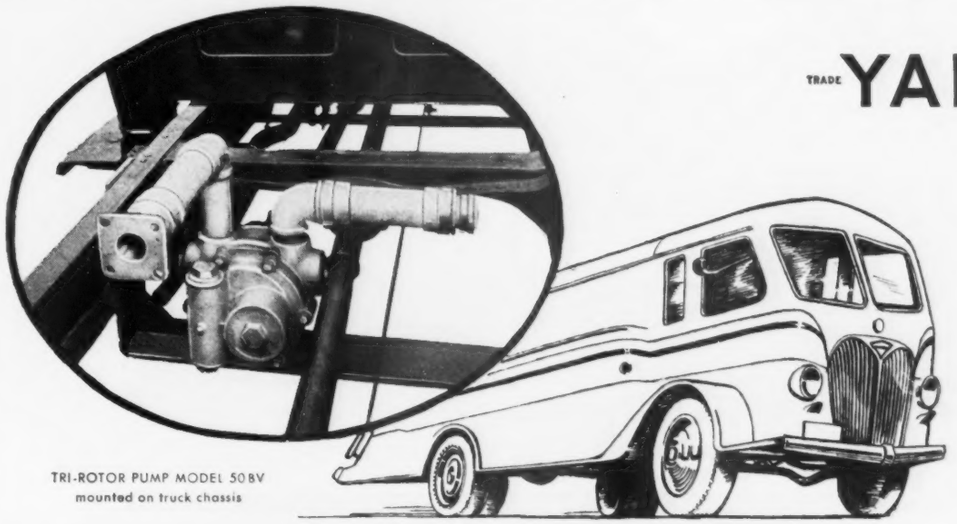
For shipments in packages: "Petroleum products transported in drums on tank trucks or tank trailers will be charged for at rates applicable to the same products shipped in tank truck and trailer lots. These rates will apply to the combined weight of drums and contents. The empty drums are returned free."

Commodity description and minimum charges: "Gasoline, including casinghead gasoline, distillate and kerosine in tank truck and trailer lots. The charge for each shipment shall be based upon the full gallonage capacity of the tank truck and the tank trailer furnished, at an estimated weight of 6.6 pounds per gallon; provided, however, that if due to laws restricting gross weight of equipment and loads, carrier is unable to load to full gallonage capacity of the equipment furnished then the charge will be based upon the number of gallons transported, subject to a minimum of 85 per cent of the full gallonage capacity of the tank truck and tank trailer.

"Crude oil, absorption oil, lubricating oil, gas oil, smudge oil, fuel oil and road oil in tank truck and trailer lots. The charge for each shipment shall be based on the full gallonage capacity of the equipment furnished, at an estimated weight of 7.75 pounds per gallon." The same restriction as to gross weight in accordance with highway limits also applies here.

While these schedules substantially increase previous truck transportation rates, where the charge was based on a gallonage unit, they are not expected to affect the volume of petroleum products moved by contract haulers on the Pacific Coast. However, in the opinion of several marketing companies, these higher rates will increase the use of oil company owned transport equipment for making bulk shipments over the comparatively short haul.

TRADE YALE MARK



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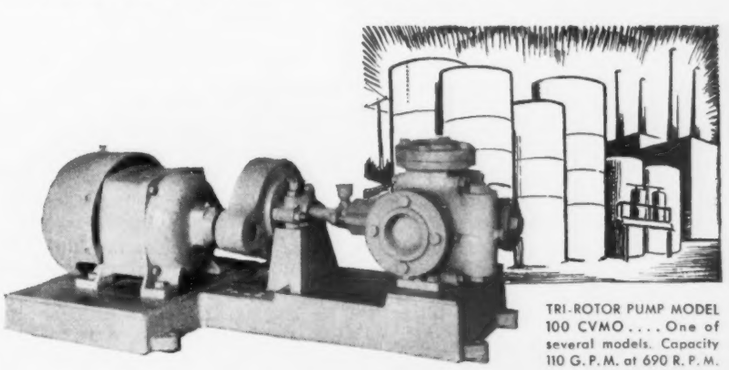
TRI-ROTOR PUMP

ATTRACTIVE appearance is only one element in modernization. Efficient, money-saving improvements in mechanical details—both of trucks and bulk plants—are of the greatest importance.

That is why so many leading oil companies have adopted the TRI-ROTOR, made by YALE.

Because of their greater efficiency, the outstanding economies they effect, their quiet operation and their durability, TRI-ROTOR PUMPS are as up-to-the-minute in performance as the new streamlined tank trucks are in appearance. They are the safest, most dependable units with which you can equip your trucks or bulk plant.



TRI-ROTOR PUMP MODEL 100 CVMO . . . . One of several models. Capacity 110 G.P.M. at 690 R.P.M.

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2. Heat generation is eliminated
3. Reduces vapor losses in handling volatile liquids
4. Excessive pressures are eliminated
5. Less power is required
6. Constant minimum pressure is maintained
7. Does not "shock the line" when starting delivery
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9. Extremely quiet in operation
10. An exceptional bearing—9¾ inches

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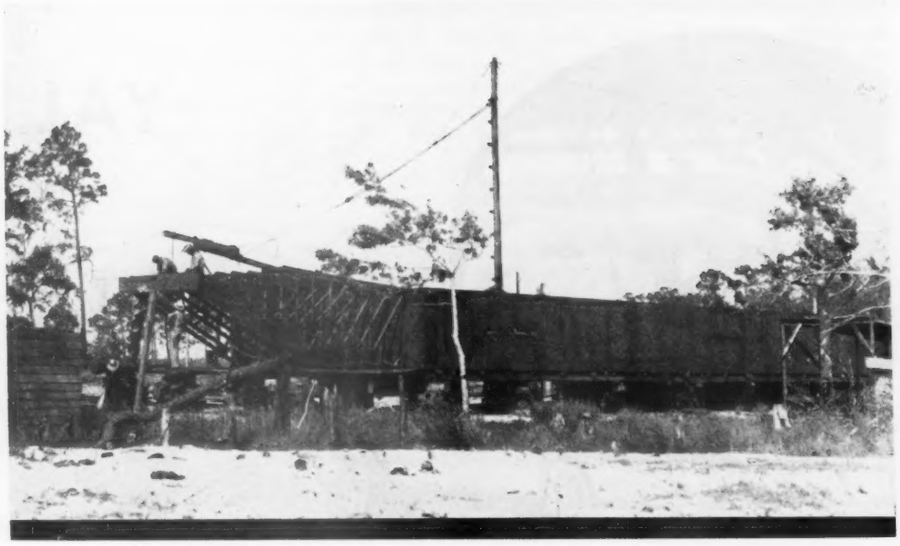


In a setting of sand and stubby pine trees, Charles J. King, an independent oil jobber, is building, with his own crew, a 4000-barrel steel barge, on the banks of Basin Bayou about 50 miles east of Pensacola, Fla. With this barge and a towboat he operates himself, this jobber will go 1000 miles to Texas for his gasoline

Florida Jobber Builds His Own Barge To Haul Gasoline From Texas

DOWN in Florida, on the banks of Basin Bayou flowing into Choctawhatchee Bay, about 50 miles east of Pensacola, is an "integrated" oil jobber —or the nearest approach to one we have ever encountered.

Two hundred miles back up in the Georgia hill country, we had heard rumors of a Florida oil man "who is building himself a barge to go clear to Texas for his gasoline." And here it was, this almost legendary barge, being built by the roadside in as primitive a setting as could be imagined.

Slowing down to avoid hitting an old sow and her litter parading across the road, we saw a nearly-completed steel barge such as might come from a big shipyard along the coast.

The barge loomed mountainously large in its setting of stubby pines and sand. At one end, a glaring point of flame flared as a hooded worker welded steel plates together. A portable generator, driven by an automobile engine and mounted on a chassis, fed the acetylene torch.

That acetylene torch, miles from an electric power line, was the tip-off that here was the "integrated" oil jobber we were seeking. In the trees, there was a glimpse of oil tanks and beyond a steel pier with a half-unloaded barge bobbing at anchor offshore.

This, then, was the marine terminal of the Independent Oil Co., with headquarters at Dothan, Ala., owned and operated by Charles J. King, of De Funiak Springs, Fla. Big and brawny, King can —and probably does—swing a 20-pound sledge against the chocks holding the barge as well as any of his crew.

To build a steel barge of about 175,000 gallons capacity and send it a thousand miles or so to Texas for gasoline is just another step in King's "do-it-yourself" policy which he has followed in building up a substantial oil jobbing business from a single small-town filling station.

Located in the backwoods, with his marine terminal on a side road, King is proud of the fact that he has had to do—and very successfully, much of his own work right on the ground. In a hundred different ways, he has used his ingenuity to cut corners and save a dollar here and there.

When additional tanks were needed at his bulk plant, for instance, he got the idea of doing it himself. He got together a crew of capable workmen and assembled a portable welding outfit. Bringing in his steel by truck, King has built storage tanks as large as 80,000 gallons. He has also built and mounted on trailers his own truck tanks.

Several years ago King decided that he ought to do something about the exorbitant railroad freight rates into his territory from independent refining points in the southwest. Rail rates were being cut from New Orleans and Baton Rouge and, with every rate slash, the differential over El Dorado and other independent refining centers was increased.

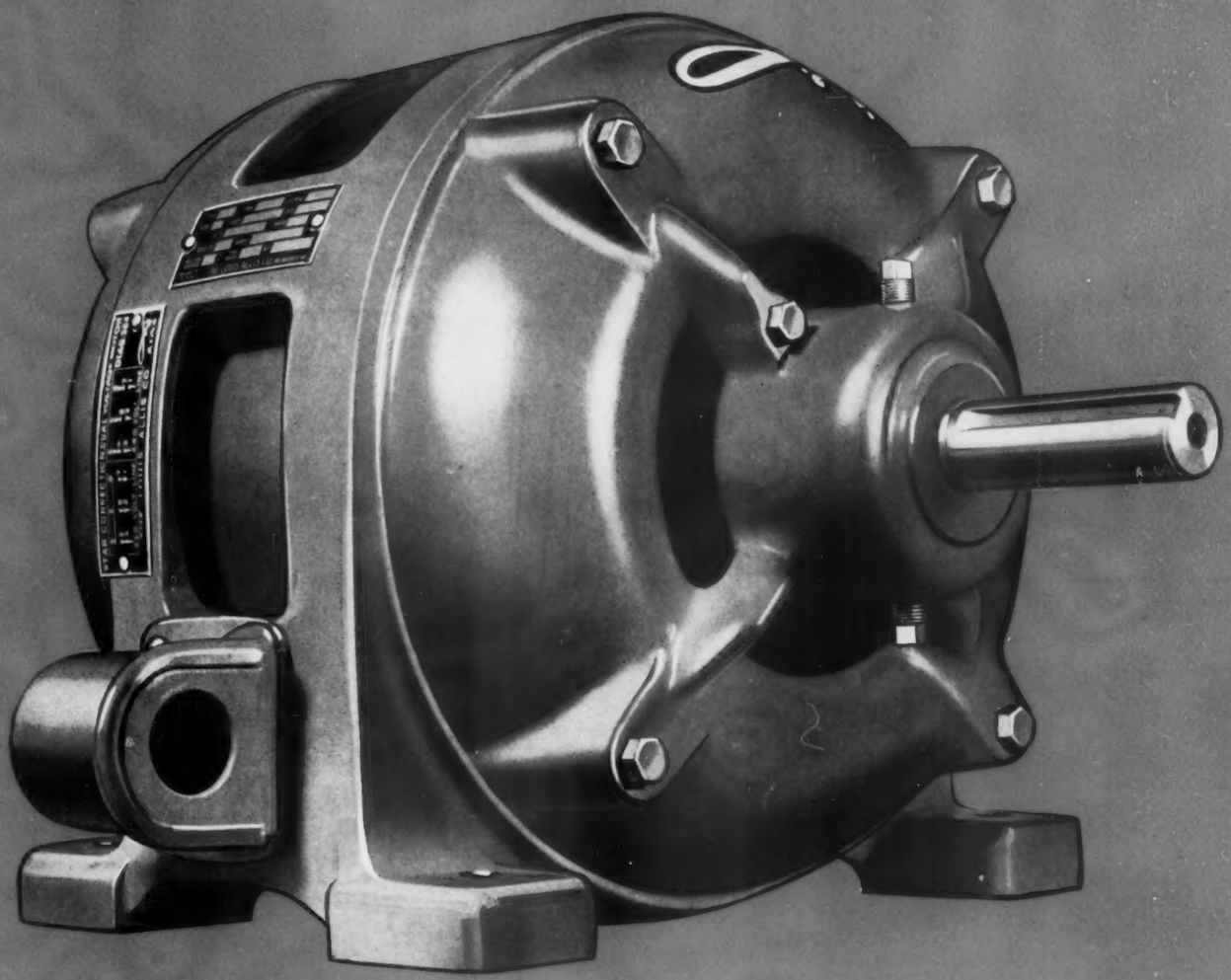
He couldn't make his own gasoline, but he could go to the refinery and bring it back, King reasoned. So he began barging gasoline from an independent refinery at Mobile, Ala., and from terminals of East Texas refiners' at New Orleans.

Now, King is operating two towboats and two barges over the Intracoastal Canal to Mobile and New Orleans. Occasionally, he goes all the way to Houston for a boatload.

King hauls his Pennsylvania grade lubricating oils from Mobile. And—as you may have guessed—his next move is to install a canning plant at his marine terminal and do his own canning of lubricating oils.

This enterprising jobber has his ear to

LOUIS ALLIS



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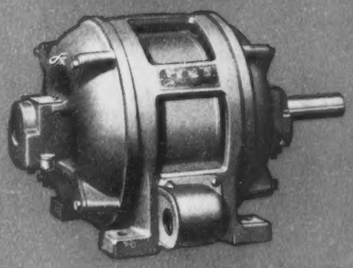

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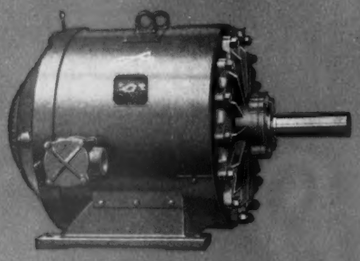

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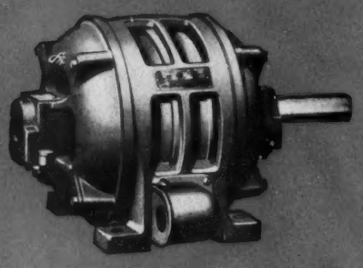

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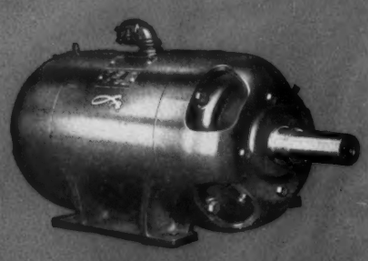

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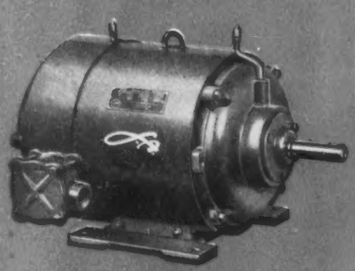

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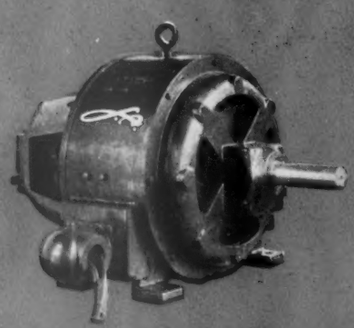

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Complete information and suggestions for your particular drive will be gladly sent upon your request.

We invite your inquiry . . . your needs will receive our most prompt and careful attention in every way.

THE LOUIS ALLIS CO., MILWAUKEE, WIS.

King follows a "do-it-yourself" policy. He built these bulk storage tanks and the truck on this transport tank truck—one of the seven he operates out of his marine terminal at Basin Bayou in western Florida

the ground and follows developments in the oil industry as a whole. He hears that Corpus Christi, Texas, is destined to succeed East Texas as the center of independent refining. He wanted to buy down there, but a larger barge was needed to make the trip worthwhile.

So he decided to build himself a larger barge, right there at his terminal on the banks of Basin Bayou. Rigging up a hoist made from two skinned pine poles, he pulled his welding crew off their tank-building activities and set them to work on the barge after getting the specifications approved at Washington.

To the layman's eye, the barge already appears to be a workmanlike job and King assured us that, with the addition of the deckhouse, rails, anchor, fire-fighting equipment and a couple of coats of paint, it will look even more like a "factory-built" job.

Built of ⅜-inch steel, the barge contains 125 tons of steel, all of which was hauled from Birmingham, Ala., in King's own trucks. It has a length of 130 feet and is 25 feet wide, drawing about 7 feet of water when loaded. Divided into 10 compartments, its total capacity of more than 4000 barrels will permit the hauling of a wide variety of products.

To haul the new barge, King expects to use the larger of his two towboats. It is a 64-footer, with a 150 horsepower Fairbanks-Morse diesel engine. The trip to Texas, using the Intracoastal Canal protected route all the way, will require the better part of a month.

King's "do-it-yourself" philosophy carries over into his marketing operations. Most of his gallonage of approximately 300,000 gallons a month moves through his own stations. From his marine terminal to his bulk plants, he hauls in his own transport tank trucks—seven in all, besides the smaller trucks used from bulk plant to filling station.

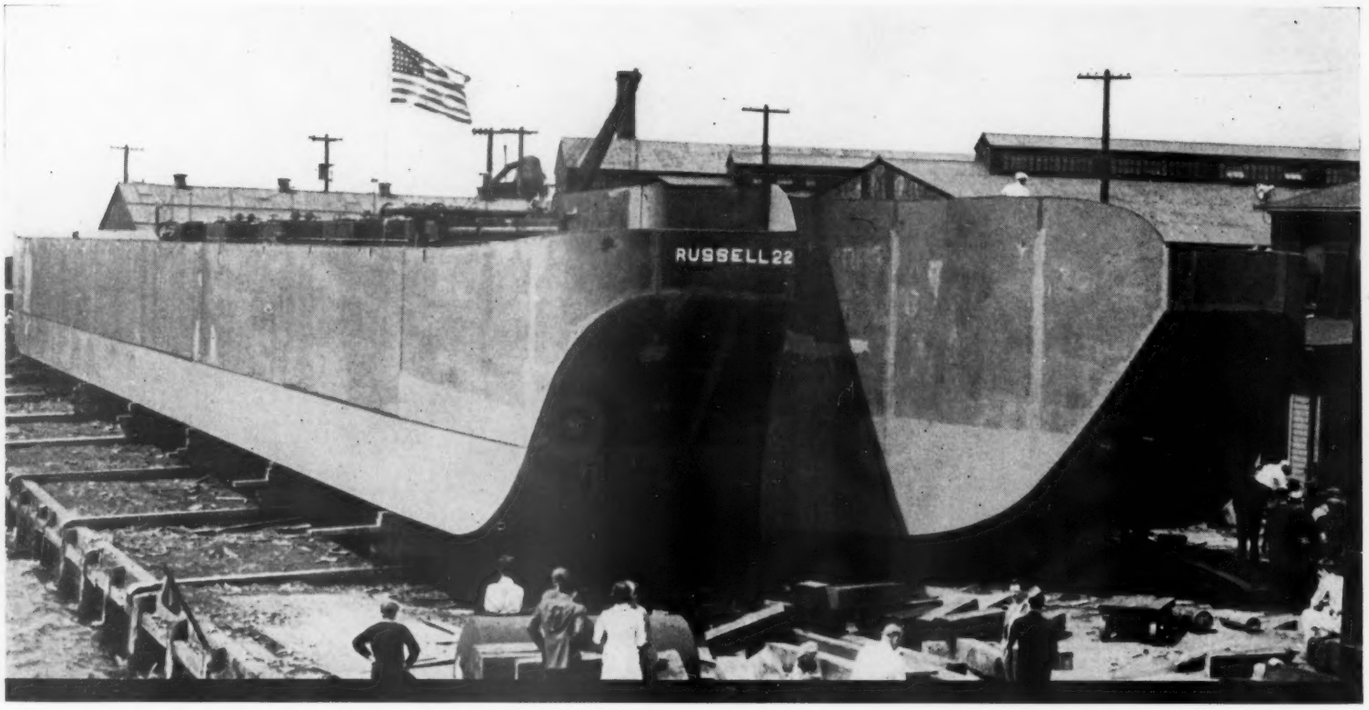
Here is an "integrated" jobber whose gasoline never sees the inside of a tank car and is in his own equipment from the time it leaves the refinery until it reaches the customer's automobile tank at the filling station.

All of King's bulk plants are located within a radius of 150 miles from his marine terminal; and, strange as it seems, he is satisfied with his present territory and he is not hungry for additional gallonage. Further expansion with longer hauls, he believes, would mean risking a loss on his present business.

King sells under his own brand at a price one cent under the major oil companies' branded product, but he insists that he is just as much interested in a stable price structure as any jobber selling a major company brand. He has no quarrel with the major companies and numbers some of their officials among his best friends.

If, in future years, there are reports of a new refinery or pipeline project down in the land of sand and pines of western Florida, you can put it down that King has a hand in it, because with his "do-it-yourself" policy that will be the next development of this "integrated" jobber.

Charles J. King, of De Funiak Springs, Fla., built the tanks on his transport trucks and the storage tanks at his bulk plants and marine terminal, and is now constructing a 4000-barrel steel barge to go a thousand miles to Texas for his gasoline. His Independent Oil Co., with headquarters in Dothan, Ala., is independent in name and every other way



Latest thing in the oil barge line is the "Russell 22", owned by Russell Brothers Towing Co., New York. A V-shaped cut in her stern—20 feet by 20 feet—permits the tug to push, instead of tow, the barge, thus making it maneuver better, the company states. The tug also can nose into barge and both get through the locks in the barge canal at the same locking operation, saving considerable canal tolls. The barge is approximately 230 feet long

Oil Is Biggest Customer Of New York Barge Canal

By **T. W. WATSON**
N. P. N. Staff Writer

• • •

BACK in 1825 far-seeing New York staters, led by Governor DeWitt Clinton, opened the state's first major canal development—the Erie Canal—for general use. Today, 112 years later, the New York canal system, known as the "Barge Canal" has entered what promises to be the biggest year in its history.

The present system of New York state canals was opened for general use in 1918, but has been improved since then so that motorships over 2000-ton capacity can move from New York City to the Great Lakes, instead of the 1000-ton type barges originally intended.

The present canal system consists of the Erie, Champlain, Oswego, Cayuga and Seneca Canals, with a total distance covered of 525 miles. Over $180,000,000 has been spent in their development and improvements are constantly being made. The system has 57 locks, capable of handling boats 300 feet long, with a 43.5 foot beam and height out of water of 15 feet.

The largest contributor to the increased growth of tonnage on the barge canal in late years has been the petroleum industry. In the period starting in 1926 and through 1936, movement through the canal increased from 2,369,367 net tons to 5,014,206 tons. Of this increase, 1,844,902 tons consisted of petroleum products, or over 69 per cent.

Freight through the canal in 1937, up to May 23, totaled 713,561 tons, of which 366,679 tons were petroleum products. In the similar period in 1936, total tonnage was 635,361, of which 284,639 tons were petroleum products.

TABLE I

	Net Tons	Per Cent
From points of origin outside N. Y. state to destinations beyond N. Y. state	475,912	10.60
From points of origin outside N. Y. state to destinations within N. Y. state	1,058,958	23.59
From points of origin within N. Y. state to destinations beyond N. Y. state	626,379	13.95
From points of origin within N. Y. state to destinations in N. Y. harbor (New Jersey)	60,150	1.34
From points of origin in N. Y. harbor (New Jersey) to destinations within N. Y. state	540,173	12.03
Total Interstate	2,761,527	61.51
From points of origin within N. Y. state to destinations within N. Y. state (Intrastate)	1,727,645	38.49

As an example of how the traffic flows through the canal, Table I gives the distribution for 1935, as reported by the Department of Public Works, New York.

A good example of what low-cost water transportation means to a city is Albany. This city, located on the Hudson river just below its junction with the barge canal, has become an important distribution point for petroleum products due to its location. Oil companies ship their products there either in coastwise tankers or barges and they are then re-distributed by tank truck, barge or tank car. Many companies use Albany as a distribution point for western Massachusetts, parts of Vermont and New Hampshire and all of upper New York State.

The records of the New York Department of Public Works show that, during 1936, there were shipped from Albany 790,088 net tons of petroleum and its products; 39,965 tons of molasses; 10,940 tons of scrap iron; 101,000 tons of fertilizers;

45,796 tons of grain; 2517 tons of lumber; 24,850 tons of wood pulp; and 1841 tons of bituminous coal; a grand total of 916,098 tons.

This compares with tonnage shipped from Albany in 1931 (a typical year) which totaled 534,083 tons. It was divided as follows: petroleum and its products, 527,672 tons; pig iron and billets, 839; lumber, 822; wood pulp, 2,550; and miscellaneous manufactured products, 2,200 tons.

Albany's close connection with the barge canal has proved of importance to oil companies in lowering freight charges on petroleum products moved westward. For example, barge freight rates on gasoline from Albany to Utica are 0.33 cents a gallon, compared to 0.726 cents a gallon by railroad. The rate from Albany to Syracuse is 0.53 cents by barge and 1.188 cents by tank car; Rochester is 0.75 cents by barge and 1.650 cents by rail; and Buffalo is 0.83 cents by barge and 1.848 cents by rail.

When the Erie Canal was opened in 1825 it was operated on a toll-charging basis for many years. However, in 1894 an amendment to the state constitution was adopted, providing that no tolls should be charged thereafter. Since then the upkeep of the canal has come from state revenues.

Petroleum Tonnage on N. Y. Barge Canal

(By Years Since 1926, Compared with Total Tonnage, Figures in Net Tons of 2000 Lbs.)

	Petroleum Products	Total Tonnage
1926	325,705	2,369,367
1927	393,497	2,581,892
1928	415,098	3,089,998
1929	474,482	2,876,160
1930	737,484	3,605,457
1931	889,476	3,722,012
1932	983,036	3,643,433
1933	1,365,338	4,074,002
1934	1,698,731	4,142,728
1935	1,805,797	4,489,172
1936	2,170,607	5,014,206

However, at the 1937 session of the New York legislature, recently concluded, determined efforts were made to pass bills to amend the constitution so as to allow imposition of tolls on canal traffic. A bill passed one house but failed to receive the approval of the other. The bills were reported to have the backing of railroad interests and were fought by companies shipping products along the canal and by waterway associations. An amendment to change the state constitution must have the approval of two consecutive sessions of the legislature and then be approved by vote of the people.

The imposition of tolls on movement of products through the canal would add considerably to the marketing costs of the oil industry in New York State, which at present is the largest user of the canal. Not only that, oil companies pointed out, but it would probably result in increased prices of gasoline and other products to the consuming public.

Data prepared by the American Petroleum Institute show the effect of canal transportation of petroleum products on gasoline prices at points adjacent to the canal and receiving the full benefit of the lower water transportation costs. Thirty-six towns on the canal had an average retail price last summer of 17.11 cents a gallon, 36 towns from five to 15 miles from the canal had an average price of 17.28 cents a gallon and 36 towns 20 to 50 miles from the canal had an average price of 17.6 cents. This difference was not quite as great during the winter.

Panel Truck Has Side Doors To Speed Unloading Time

ACCESSIBILITY of cargo as an aid to fast unloading features the body design of a truck used by the Lima Storage Battery Co., Lima, Ohio, for the delivery of canned oil and storage batteries to dealers.

Unlike the standard panel body, with doors open only in the rear, this truck is equipped with a door on each side, making the stock readily accessible.

The truck has a wheelbase of 157 inches and was purchased without the body. Made locally, the body is 12 feet long, 6 feet wide, and 3 feet, 6 inches high. The front doors on the sides of the body are 2 feet 4 inches wide by 3 feet high, and the rear doors are 3 feet 2 inches by 3 feet 6 inches high.

While the rear compartment is shown in the picture stocked with packaged goods, it is of a large enough size to accommodate oil drums. The shelves and floor of the truck slant slightly toward the center so that the cases will not work toward the doors while the truck is in motion. The inside panels of the doors are made with pockets to carry advertising literature, order blanks, and other forms.

The truck is used to make semi monthly calls on dealers distributed throughout 10 counties. More frequent delivery is accorded larger accounts.

This panel truck, owned by the Lima Storage Battery Co., Lima, Ohio, is practically all doors, a feature that quickly "lays the truck open" and cuts down the time of delivery at each stop. Batteries and canned oil are distributed to dealers in this unit

This is the first of 22 new transport units purchased by Warren C. Marshall, Upper Darby, Pa., contract hauler of petroleum products. The trucks are a brilliant yellow for safety. Marshall now has 35 trucks on the road, hauling out of terminals in Baltimore, Philadelphia, Marcus Hook, Pa., and the New Jersey area. In the winter time some of his trucks are shifted to hauling fuel oil

Trucking Grows In East Despite Rail Rate Cuts

WASHINGTON

UP TO a few years ago, the railroads had practically a monopoly on the oil tonnage moving inland from seaport terminals along the South Atlantic Coast. Freight rates were high, exorbitantly so, it seemed. With the development of large-capacity tank trucks, durable enougth to operate over long distances, the next step was for the oil companies to haul their own supplies. Then, the contract hauler entered the picture, offering to haul 200 and 300 miles at less-than-rail rates.

Before the railroads realized it, the trucks had a foothold, so strong that the rails have not been able to oust them even with repeated cuts in rates.

The rail-truck situation in the southeast is typified by the happenings in North Carolina. Bulk of the petroleum products consumed in the Tar Heel state comes in by tanker from the Gulf, passes through the seaport terminals at Wilmington, N. C., and thence inland by truck and tank car, with some barge movement.

Less than four years ago, in January, 1934, the rail carriers had 96 per cent of the oil tonnage moving out of Wilmington; but this dropped to 50% in July, 1935.

To combat the trucks, the rails slashed their rates an average of 8 cents a 100 pounds, or about 0.5 cent a gallon. But the truck movement continued to gain so that by January, 1936, the rail tonnage had slumped to 40 per cent with the trucks getting about 60 per cent of the total traffic. Deeper rate cuts were made effective in May, 1936, and again in August, 1936, following which some tonnage has gone back to the rails.

Now, with the rail rates in many instances cut to less than half those prescribed by the Interstate Commerce Commission, the truckers are still hauling between 40 and 50 per cent of the oil tonnage in North Carolina. More than a hundred trucks a day are loading at Wilmington terminals for hauls as far as the Tennessee line about 400 miles distant.

In the aggregate, trucks are accounting for between 30 and 40 per cent of the gallonage moving out of marine terminals along the South Atlantic seaboard, beginning with the ocean and river terminals in Virginia and on southward to the Gulf.

Apparently, there is an irreducible minimum gallonage which will stick to trucks in the face of everything that the railroads can do.

A policy of "live-and-let-live" has prevailed in the relations between the rails and trucks along the North Atlantic seaboard. The rails in this section cut their rates but not nearly so deeply as in the Southeast. Apparently, they soon realized that they could never take away all the tonnage of the truckers, so decided to keep the rates at a level which would produce good revenues on the tonnage at present moving by rail.

There is not much difference between the rail and truck rates along the North Atlantic seaboard. The truckers depend upon the "inherent advantages" of trucking to get and hold their business. Oil trucking in this territory is on a firmly-established basis.

The railroads have a backlog of business which the trucks cannot win over. Some major oil companies are making little use of transport trucks, either their own or those of contract haulers. It is the large percentage of rail movement for these few companies which keeps the ratio of rail shipments as high as it is.

But there are other major companies.

like Atlantic, Sun, and Standard of Kentucky, which are hauling a considerable volume in their own transport trucks. Other companies, including Shell, Gulf, and Pure, are hiring contract haulers to truck a good portion of their gallonage in the Southeast.

The transportation policies of the major companies are almost as varied as the number of companies. For instance, both the Standard of New Jersey and Sun Oil Co. serve the Washington, D. C., area out of their Baltimore terminals. But the Standard ships in barge, down Chesapeake Bay and up the Potomac River, trucking out of its river terminal at Washington while Sun has no bulk storage, trucking from its Baltimore terminal directly to its filling stations in the National Capital.

The practice of trucking directly to filling stations from marine and pipeline terminals is growing rapidly. In the Southeast, some jobbers, operating their own transports, are making such hauls over distances of 250 miles and more.

This is working numerous changes in the marketing picture. Some bulk plants, located during the days of mule-drawn tank wagons, are being eliminated. Larger storage tanks are being installed at filling stations to accommodate full truck loads. This means a saving in handling costs and cutting down evaporation losses involved.

The oil marketer is no longer tied down to the rail tracks in locating his bulk plants. By using transport trucks, he can place his bulk plants in strategic locations, even though 25 miles from a rail siding.

Many contract haulers are oil jobbers or dealers who started trucking their own supplies from the seaport terminals and then, needing additional gallonage to keep the truck busy, began hauling for other jobbers and dealers.

Oil trucking is more than a sideline for some jobbers now. For instance, one jobber in the Southeast with 20 transport trucks hauls for his major company supplier.

Few truckers in the Southeast can equal in size the fleets of contract haulers in Pennsylvania and other northern states along the seaboard. But there are a number of truckers with ten or more transports operating in the Southeast.

There is Blue's Truck Line, Inc., owned and operated by Lavergne Blue, of Jacksonville, Fla., which has 36 tractor-trailer combinations and 4 semi-trailer units on the road. Some of Blue's trucks haul from Jacksonville to Rome, Georgia, which is nearly 500 miles away. In the course of a year, Blue's trucks average about 100,000 miles each.

John P. Nutt Corp., Jacksonville, does much trucking for Gulf Oil Corporation, hauling from terminals all along the lower seaboard.

There are also Independent oil jobbers operating sizable fleets of their own hauling for themselves, including Orange State Oil Co., Miami, Fla., 15 transport trucks; Independent Oil Co., Dothan, Ala., seven transports; and Quality Oil Co., Winston-Salem, N. C., six transports.

But it is in the Philadelphia area where the large fleets are found. There is a group of about 8 oil truckers there representing approximately 400 transport trucks.

One of these is the Leaman Transportation Co., Downingtown, Pa., who is said to operate 80 trucks in New York, Pennsylvania, New Jersey, Massachusetts, Connecticut, Delaware, Maryland, West Virginia and Ohio.

Leaman, according to the ICC records, hauls for Gulf, American, Socony-Vacuum, Sun, Pure, Shell, Colonial-Beacon, Sinclair, Atlantic, Cities Service, Richfield, and several of the larger Independent oil companies and for some large commercial consumers.

Warren C. Marshall, Upper Darby, Pa., with 35 transports, hauls out of Philadelphia, Baltimore and other points for several major oil companies. Starting with one truck five years ago, Marshall has just purchased 22 new transports as replacements in his fleet.

Marshall estimates that his trucks handle about 2,500,000 gallons apiece in a year's operations. Like other large truckers in this area, Marshall doesn't operate on Sundays except in emergencies.

One of the largest operators in the entire country is E. Brooke Matlack, Philadelphia, who has 90 trucks and hauls for a number of oil companies.

In New England, a large part of the fuel oil tonnage moves by truck, besides a considerable part of the gasoline, kerosine and lubricating oil tonnage.

Most oil truckers confine their activities to hauling petroleum products; many started as haulers of general commodities, added a few tank trucks and now have dropped the other lines to concentrate on oil trucking. With their specialized equipment, the oil truckers regard themselves as an arm of the petroleum industry rather than a transportation agency. It is surprising how many oil truckers follow closely the general developments in the oil industry, studying the possible effect on their own operations.

New Allied Oil Tanker For Great Lakes Fleet

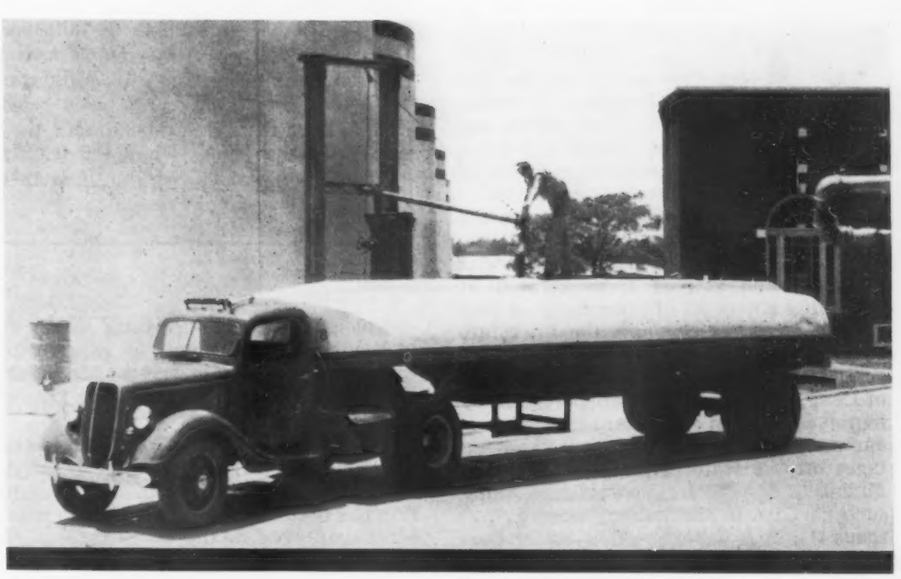
CLEVELAND, June 28.—The Great Lakes tanker fleet will soon be augmented by the Mercury, fourth tanker in the fleet of the Allied Oil Co. The Mercury is a vessel of canal characteristics with maximum capacity of 22,000 barrels.

The Mercury has started from Beaumont, Texas, where she was built by Pennsylvania Shipyards, Inc., with a cargo of oil, pass around to the Atlantic coast and enter the Hudson river at New York. Entering the New York State Barge canal at Albany, she is expected to pass through Oswego Harbor into Lake Ontario and thence through the Welland canal into Lake Erie. Arrival here is scheduled for July 10 to 15.

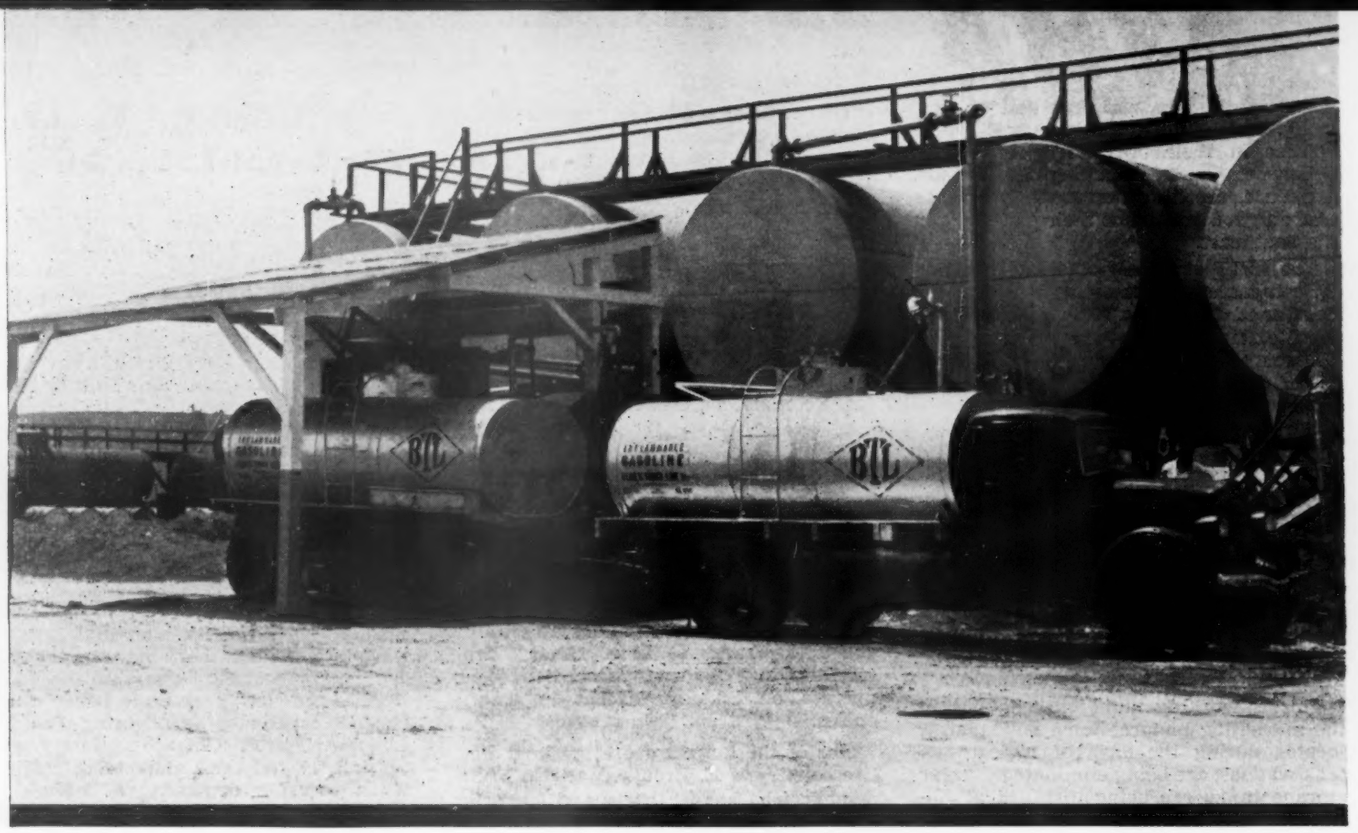
The Mercury will provide a much more flexible operation than other Allied tankers because of her ability to navigate the waterways connecting with the lakes. Besides the New York State Barge canal, she is capable of navigating the St. Lawrence river, Chicago Sanitary and Ship canal and the Calumet-Sag channel when occasion demands. A feature of the Mercury is her retractable pilot house which may be lowered to enable the vessel's passage under low bridges. Operations will be confined chiefly however to lakewise movements from Indiana Harbor. Clean products will be handled this season.

The new tanker is 256 feet long, has a beam of 43 feet, and 13½-foot draft under full load. Twin screw Winton diesel engines of 465 hp. each provide sufficient power to drive the vessel at 10 knots at full load, it is reported. No rivets were used in her construction. Welding was used throughout.

Cleveland Tankers, Inc., will operate the Mercury along with the General Markham. The Comet is operated by Marine Tankers, Inc., and the Crudoil, a smaller vessel, is operated by Allied Oil Transport Co., Inc.



Nearly all the transport trucks operating in North Carolina have a capacity of 4000 gallons or less. But here is a truck with an aluminum tank and other weight-saving devices, owned and operated by Sam T. Gresham, Jr., oil trucker of Wilmington, N. C., which has been gauged and approved by state authorities at 4160 gallons capacity. This truck makes daily trips to Raleigh and other points, 100, 200 miles and more distant



Blue's Truck Line, Inc., operates 36 truck and trailer combinations similar to this one loading at the terminal of Seaboard Oil Co. at Jacksonville, Fla. Both tanks hold 1900 gallons each, making a total of 3800 gallons for the combination. Some of these BTL transports haul from Jacksonville beyond Atlanta, Ga., which is over 400 miles distant. These tractor-trailers average over 100,000 miles annually

Advantages of Oil Trucking Are Recognized by the ICC

By G. T. KELLOGG
N. P. N. Staff Writer

• • •

● The jobber who contemplates entering the field of transport trucking will find in this article many points useful to him in obtaining his operating permits and in determining some of the federal limitations imposed.

The author explains the difference between the three types of truck hauling—private, contract and common—and points out the extent to which the Interstate Commerce Commission has jurisdiction over each type.

A number of specific cases before the ICC are described, which show the attitude of the commission toward the bulk hauling of petroleum products by truck. The interpretations which the ICC has placed on permit applications of petroleum truckers are described; for it is these interpretations which will affect the entire future of petroleum trucking.

WASHINGTON

THE first session of the 74th Congress passed, and President Roosevelt signed, August 9, 1935, a law which was to place regulation of trucks and buses crossing state lines under supervision of the Interstate Commerce Commission.

Set up almost 50 years previously, the commission took this new responsibility in its stride, provided a "Motor Carrier Bureau," and started from scratch at compiling a new set of precedents—a new "body of law"—to govern the interstate bus and truck industry.

"It is hereby declared to be the policy of Congress to regulate transportation by motor carriers in such manner as to recognize and preserve the inherent advantages of, and foster sound economic conditions in, such transportation among such carriers in the public interest . . ." reads the introduction to that Motor Carrier Act.

From interpretations of this portion of the declaration of policy, perhaps more than from any other section of the act, have come the decisions having the greatest effect on the truck transportation of petroleum products—decisions which are to become the precedents by which truck transportation permits and certificates for oil truckers of the future will be granted or denied.

Directed by Congress to "preserve the inherent advantages" of motor transportation, the Interstate Commerce Commission has declared there are "certain inherent advantages in the transportation of petroleum products by motor vehicle."

It is upon this philosophy that permits and certificates already have been issued to a number of truckers of gasoline, fuel oil and other products, despite railroad protests.

What are these inherent advantages, as seen by the federal body which for a half-century has been dealing with railroad problems? The following quotation, from the first decision in which the commission's attitude was "put on paper", explains them in part:

"There are certain inherent advantages in the transportation of petroleum products by motor vehicle. Among these are the reduction in amount of gasoline and other petroleum products which jobbers must keep on hand in storage tanks, and the elimination of the expense of trucking rail shipments of such products at destinations from tank cars to those jobbers who

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do not have storage facilities adjacent to the (rail) carriers' tracks.

"That a particular point has adequate rail service is not a sufficient reason for denial of a certificate; shippers and consignees of petroleum products are entitled to adequate service by motor vehicle as well as by rail."

In the above case, rail carriers had protested against the granting of a common carrier certificate to Edward A. Bowles, Maryville, Mo., oil trucker, on the ground that points he sought to serve, in southwestern Iowa, were all located on rail lines. Bowles' operations entail hauling of gasoline and other petroleum products from Kansas refinery points to the Iowa towns. The certificate was granted last January.

This attitude on the part of the federal government is something entirely new in regulation to many of the petroleum truckers, who, up until passage of the Motor Carrier Act, were subject to state regulation only—often varying with the states in which they operated and frequently bearing earmarks of railroad inspiration.

So far, the ICC's regulations, while stringent, show no hint that any of them were drafted with any other purpose than to "preserve in full vigor" motor transportation as well as water and rail carriers.

Results of this federal policy toward oil trucking have been to quicken the consciousness of the truckers themselves, give their operations prestige as a definite "industry"; as well as to take into consideration the jobber and other users of such transportation service.

That the oil industry's needs also are being taken into consideration in this new "corpus juris" for motor trucking is obvious from the quotation above, in the Bowles case, as well as other decisions, wherein are cited the inherent advantages to the oil marketer—including more rapid service, obviating the necessity for large amounts of storage, possibility of locating bulk plants away from railroad yards, and decreasing necessity for frequent handling.

Enlarging upon the advantages cited in its decision on the Bowles permit, the Interstate Commerce Commission declared, in a decision granting the application of Emanuel Alboum to carry petroleum products from Olean, N. Y., to Pennsylvania points:

"The proposed method of transporting petroleum and its products is more flexible and more economical than the service provided by rail. Lots of 750 to 3500 gallons can be hauled and delivery made directly to service stations and to all the destinations herein named within five hours.

"Shipments of these commodities by rail are subject to minima of 8000, 10,000 and 12,000 gallons, according to the capacity of the car used, and delivery to the destinations named cannot be made in less than one to four days.

"This rail service also entails the added expense of maintaining sidings and storage tanks at destinations, the unloading from tank car to storage tank, and the loading of small trucks from the storage tank."

IN another case decided by ICC in favor of oil truckers, over rail protests, the railroads protested that tank trucks of gasoline on the highways were a "hazard" not only to the public on the highways but to the railroads—presumably because the trains might strike them at grade crossings.

This case, involving five Nebraska contract carriers who sought permits to haul petroleum products from Kansas refineries to Nebraska points, was the first of its kind in which an oral argument was presented before the commission.

Not only did the commission completely ignore the "hazard" plea of the railroads, but it again cited the "inherent advantages" of trucking oil in its report:

"There are certain inherent advantages in the transportation of petroleum products by motor carriers over their transportation by other agencies. Jobbers of petroleum products may receive those products in smaller quantities by motor carrier than by rail. This enables them to reduce the amount which they must keep on hand, and thereby limit their investment and increase their turnover.

"Petroleum products shipped by rail to consignees who do not have storage tanks into which these products can be unloaded direct from tank cars must be unloaded from the tank cars into tank trucks and transported by tank truck to the consignee's storage tanks. When shipped to such consignees by motor carrier, the products can be unloaded direct

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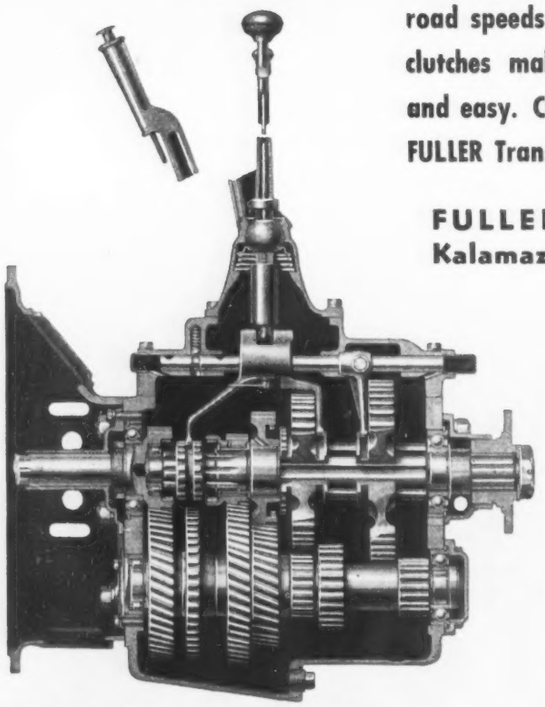

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to the storage tanks from the trucks in which the line-haul transportation is performed."

In the eyes of the Interstate Commerce Commission, three distinct types of motor carriers exist—all of them represented in the petroleum and petroleum-carrying industries. They are the private carrier, the contract carrier and the common carrier.

Typifying the private carrier are the company-owned tank trucks that haul gasoline, fuel oil, or other products owned by the same company. For instance, if John Jobber buys his own truck, outfits it, and uses it to go to the refinery, or terminal, of his supplying company for oil to bring back to his own bulk plant, he is a private carrier, and as such subject to virtually no federal regulation so far as his trucking operations are concerned, even though his operations may cross state lines.

Of course, he must conform to regulations of the states through which he passes. An investigation was started by the commission, in 1936, into the "need for establishing reasonable requirements to promote safety of operation of motor vehicles used in transporting property by private carriers," but it is still pending. The Motor Carrier Act provides for such regulation, if found necessary.

THE commission recognizes that there are "administrative difficulties in dealing with these private carriers, principally because the Act does not require them to obtain from us authority to operate, and there are, therefore, no applications on file enabling us to identify and locate them. For these and other reasons, they present a problem requiring special consideration."

Under the present law, safety requirements are probably the limit to which ICC could go in regulating interstate private carriers.

With widely divergent state safety laws, these truckers, however, might welcome uniform, and in some cases more liberal, safety regulations under federal jurisdiction, however.

But, suppose Mr. Jobber finds that his transport tank truck is idle half the time, because he doesn't have sufficient gallonage himself to keep it busy running between his supplier's terminal and his own bulk plant. Suppose, also, that another jobber, in a neighboring town, seeing how the first is saving a cent or more a gallon on his transportation costs and avoiding waiting until the railroads find time to deliver his products, comes to John Jobber and asks him:

"Why don't you keep your truck busy the other half of the time by hauling to my bulk plant? I'll give you a contract, and you can do it for me more cheaply and give me better service than I'm getting now from the railroads."

If the first jobber accepts, he will fall into the class of "contract carrier", many of whom are on the roads today who got their start in the same manner.

A contract carrier comes under the regulatory powers of the Interstate Commerce Commission if he crosses a state line and must make application to ICC for a contract carrier permit, as well as ful-

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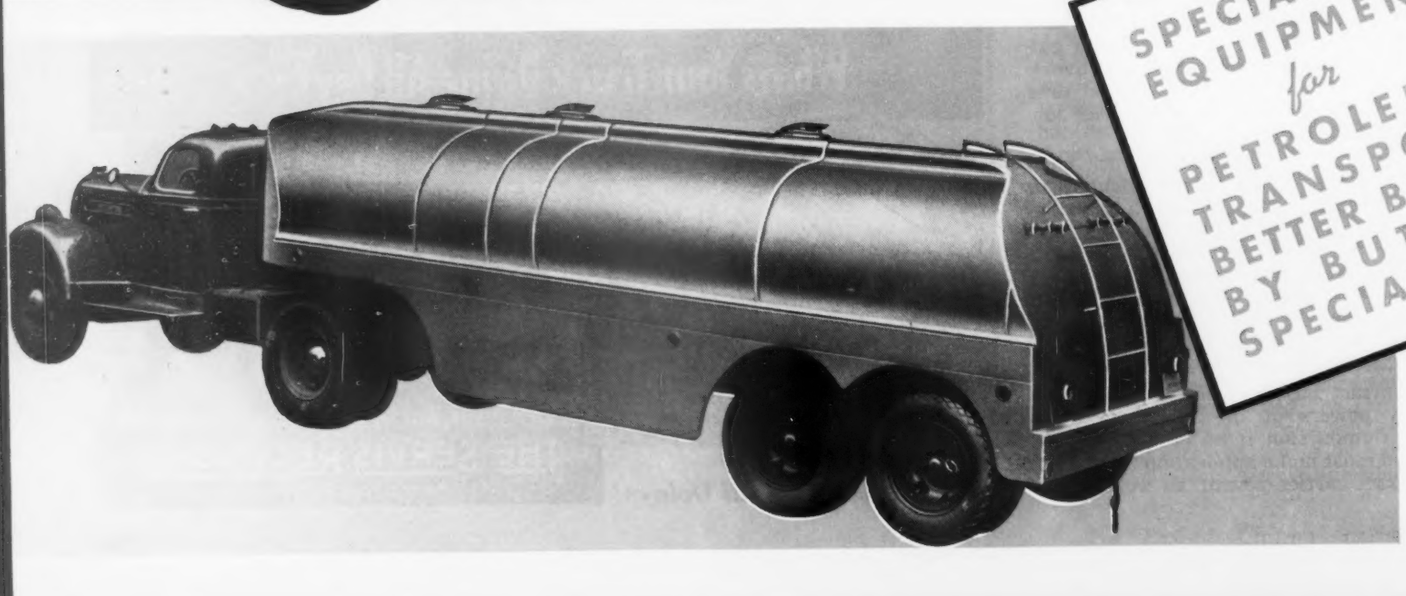

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Axle No. 2	Axle No. 3	Axle No. 4	Axle No. 5
Loaded Weight	Loaded Weight	Loaded Weight	Loaded Weight
1/10 of 1%	1.4%	1.6%	2.1%
UNDER	UNDER	UNDER	UNDER
Allowable Weight	Allowable Weight	Allowable Weight	Allowable Weight

"On the nose" accuracy in weight distribution requires fine engineering skill. Butler engineers have long since mastered the technique. Whether it's a 2,000 gallon semi-trailer, a 10,000 gallon train, or anywhere between, you can depend upon proper weight distribution in Butler Trailow-Tanks. Following is a table of axle load accuracy on the 10,000 gallon Trailow-Tank Train shown above.

The above percentages do not include mud allowance or spare tires and unloading hose. When these extras are added, loaded weights will be "right on the nose" with allowable weights.

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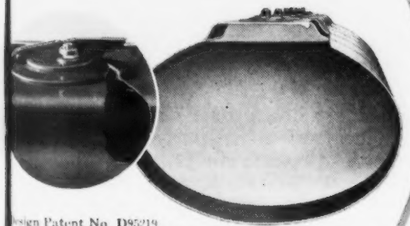

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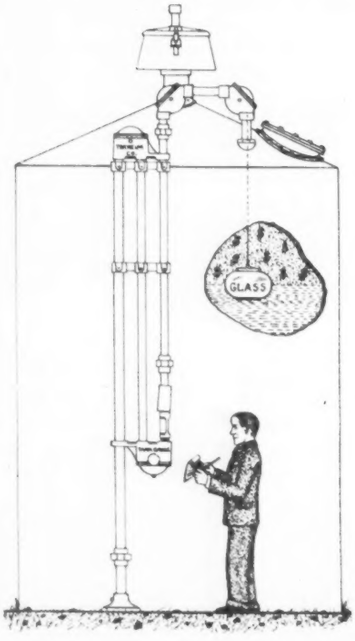

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filling the permit requirements of the states through which he is to operate.

If he was in operation as a contract carrier prior to June 1, 1935, he is eligible, under the so-called "grandfather clause" to continue such operation until his application is granted or he is ordered to cease by ICC. If he does not come under the "grandfather clause" he must wait until his permit is granted by ICC before he can begin interstate operations.

In applying for his permit he must show that he has definite contracts with oil companies—either the suppliers or those to whom the supplies are to be hauled. He must file minimum charges, which the commission must approve, and he must make a showing that the operation he proposes is "consistent with the public interest and with the policy" declared in the Motor Carrier Act.

If there are no protests, either from competing truckers or from the railroads (there usually are), and John Jobber makes satisfactory showings of all the above, he is granted his permit.

IN case of protests, hearings usually are ordered, either before a "joint board" or an Interstate Commerce Commission examiner. The joint boards are set up in all parts of the country, representing the states in which operations are proposed, as well as the ICC. Often their members are also members of state regulatory bodies.

If the applicant is found, from testimony at the hearings, to be "fit, willing and able" and to conform to the regulations, including safety and insurance requirements, the joint board makes a recommendation to the ICC that the permit be granted. If not, recommendation that ICC deny the permit is made.

Then again, protests of rails or other truckers may be presented to the commission, which takes the case under advisement, usually accepting the joint board's recommendations.

One argument which has been presented to bolster an application for a permit in several cases is the testimony of officials of oil companies to be served by the proposed operation that such operation is essential to their business. Such a showing often is instrumental in the granting of the permit.

However, the mere desire of a shipper to engage the services of a particular trucker is not a valid reason for granting of a permit, ICC ruled in its report on the application of the C. & D. Oil Co. to carry fuel oils from Everett, Mass., to Exeter, N. H.

ICC ruled that the granting of a permit "on this ground alone would not be consistent with the public interest," and pointed out that the C. & D. Oil Co. did not propose "a service which is in any way particularly adapted to the requirements of the shipper or consignee, or in fact which differs in any way from the service now performed in this traffic."

In one actual case paralleling that of our fictitious John Jobber, an oil company went into the contract hauling business, and protests were filed to his permit based on the "unfair and destructive competition" said to have resulted "because applicant's contract carrier operations are

incidental to the conduct of its private business as an oil dealer, and further, because the rates charged by it are slightly lower than those of common carriers."

ICC, however, granted the application, that of Vedder Oil Co., York, Pa., pointing out that; "the act does not prohibit operation of motor vehicles for hire by a person also engaged in the mercantile business, or the performance of motor carrier service by any such person for his vendor." In the same case the lower contract carrier rates offered by Vedder were cited as an aid to his contractors in "meeting the competition of major oil companies." The ICC said:

"The latter (majors) have the advantage of rail rates from Baltimore to York which are on a lower level than the rail rates from Wilmington to York. They also have joint pipeline and motor-carrier service into the destination territory. This type of service is not available to the Crane Co. (Crane Hook Oil Storage Co., Wilmington, from whose plant petroleum products are trucked by Vedder to York)."

Common carriers of petroleum products in this territory are, to a large extent, employed by the major oil companies, the ICC pointed out, adding "service by rail is unavailable in some instances, and in others is inferior to that by trucks, particularly in the matter of speed."

UNDER a recently issued regulation, contract carriers, like our friend John, must reduce to writing all their bilateral contracts with shippers by July 1, and two weeks later, July 15, must have them on file with the commission in Washington. This regulation was promulgated following hearings, where it was testified that many truckers who were actually common carriers were passing as contract carriers by citing certain "oral" contracts with shippers.

But if our Mr. Jobber finds there are a number of filling stations and other jobbers in his territory that would like to use his trucking service from time to time, as they need supplies, but who will not enter into contracts for such service, he may make application for a "certificate of public convenience and necessity" as a common carrier.

As such he would have to file rates and tariffs with the ICC, subject himself to rate regulation, and hold himself out to the public as a common carrier, who must accept such transportation tenders as are offered. ICC regulatory power over common carriers is much more strict than over contract carriers.

The chief difference between these two types, insofar as the granting of certificates or permits to operate is concerned, was clearly explained by the commission in its report on the application of Bassetti & Lawson, New England oil truckers, for a permit. The report said:

"The language of the statute makes it quite clear, we think, that the requirements for issuance of a permit are not as exacting as those governing issuance of a certificate. In the case of the latter it is necessary to find that the present or future public convenience and necessity require the proposed service, whereas in the former it is necessary to find only that it is consistent with the public interest.

"Where an applicant proposed to operate as a common carrier, the statute requires, among other things, consideration of the extent to which the territory is at present served, the need for additional common-carrier service within the territory, and the facilities which the applicant can provide to supply a common-carrier service to all shippers. Less is demanded in the case of a contract carrier."

In its requirements for filing of tariffs by common carriers by motor vehicle, ICC has set no hard and fast rules, requiring only that tariffs be sufficiently definite so that shippers will be able to determine the rates.

If the rates are stated in cents per 100 pounds, as is the case in railroad tariffs, the carrier filing the tariff must state what weight basis will be used for bulk products, such as petroleum products. (The railroads' estimate of 6.6 pounds per gallon for gasoline transportation is now being attacked by many shippers in a case filed at ICC).

If, on the other hand, the trucker wants to base his charges on actual gallonage hauled, regardless of weight estimates, he may file rates of cents, or fractional parts of cents, per gallon per mile. When mileage enters into the rates, the trucker must state whether the mileage he uses is based on actual distance or road-map distance.

Both common and contract carriers must show that they are financially able

Wherever flexible pipelines are used—on Boats—Docks—Refineries—Loading Racks . . . . greater efficiency and economy can be achieved by the use of Chiksan Ball Bearing Swing Joints. They provide complete 360 degree swivel action without leaks and without binds; they are unaffected by heat, cold, oil and a variety of corrosive fluids; and they safely withstand tremendous pressures. They are available in a great variety of rotating actions to efficiently meet any kind of swivel problem, and are regularly supplied in steel, malleable, iron, or special heat-treated aluminum alloy in flanged, threaded or plain welding ends to connect into standard line pipes of all popular sizes and materials.

One look at the sleek, streamlined exterior of the Chiksan Ball Bearing Swing Joint and you know that it is no ordinary swing joint. No projections to catch workmen's clothes, no bolts or nuts to become loosened, and nothing to interfere with complete 360 degree swiveling. For a new standard in Swing Joint Performance modernize your loading and unloading equipment with Chiksan Ball Bearing Swing Joints. Recommendations gladly furnished. Write for descriptive literature.

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Build yourself sound goodwill by marketing the world's best grade motor oil under your own name. Our refinery is equipped to pack and seal a variety of oils—all refined from 100% pure Pennsylvania grade crude—in jobbers' own private brand cans. • Write today for prices and for information on Freedom brands available for exclusive marketing.

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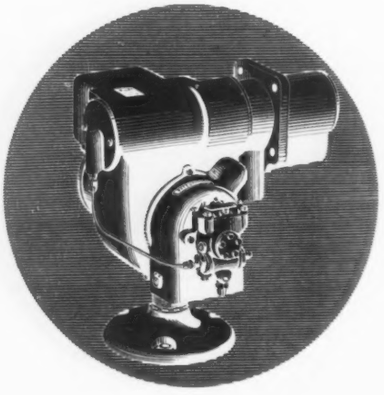
to concentrate your efforts on the sale of oil-burning home-heating equipment — but be sure it's the BETTENDORF WAY of AUTOMATIC HOME HEATING you have to offer. You'll appreciate this friendly tip next fall and winter when the gas pumps are on vacation.



It's a sure-fire, profit-making business—this home-heating with oil, and when you have the Patented BETTENDORF DOUBLE-HEAT OIL BURNERS to sell, you profit in more ways than one—you profit abundantly on the original sale, you profit on the fuel oil you sell, you profit by virtue of the low-cost upkeep, and you profit by the steadfast friendships you make by having given the utmost value in burner performance.

Bettendorf is away out in front in engineering efficiency—recognized by leading engineers from coast to coast; occupying the enviable position of Engineering leadership for more than 10 years.

Write today for complete information. Fortify yourself now against that heretofore inevitable winter slump.

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OIL BURNERS

to conduct the proposed interstate operations, and that the operations will prove profitable.

The ICC does not question the ability of trucks to haul petroleum products at rates lower than the rails, however, nor deny any permits for this reason alone. In its report granting the application of Earl Bray to operate between Drumright, Okla., and Frontenac, Kans., it pointed out:

"The original contract between the parties provided that the transportation should be at a rate 10 per cent less than the current rail rate between the same points. This contract was later amended to provide for a specific rate of 20.25 cents per 100 pounds, which is the equivalent of 10 per cent less than the present rail rate of 22.5 cents.

"The distance between Drumright and Frontenac is 190 miles, and applicant shows that he has been able to earn a reasonable profit from the operations in addition to paying a salary to his employe and himself."

Safety regulations for both common and contract truckers, issued by ICC after an *Ex Parte* investigation last November and December, are divided into four general categories: Qualifications of drivers, including identification of each driver; rules for driving of motor vehicles; parts and accessories necessary for safe operation, and reporting of accidents. While all of the regulations include tank trucks, insofar as they are common or contract carriers in interstate commerce of the types specified in the individual rules, several of the regulations apply to them more specifically.

In addition to these rules, common carrier trucks also are subject to the "Regulations for the Transportation of Explosives or Other Dangerous Articles on Public Highways by Motor Truck or Other Vehicle," prescribed under an act passed in 1921.

No estimate of the number of oil truckers subject to federal regulations as common or contract carriers is available, since applications from operators of all types of trucks and buses still are being received by ICC's Motor Carrier Bureau to swell the more than 80,000 already under consideration. The bureau is working feverishly to get clear of the mass of applications that has been piling up since the act went into effect, and has had no time to tabulate the applicants by commodities.

Applicants for permits and certificates as petroleum truckers cover a wide range insofar as equipment is concerned. Many are one-truck haulers; others operate from a dozen to 40 or 50 tank trucks.

The Motor Carrier Act gives the Interstate Commerce Commission even broader powers than it is exercising now—including stricter control of rates, and almost blanket authority to prescribe accounting, record and reporting systems, as well as the prerogative of recommending that Congress pass additional regulatory legislation for the commission to administer.

Whether any of these "possibles" may be called into play by the commission so as to tighten its control of interstate motor-carrier operation probably depends upon the efficiency of the present act and flaws which may be found during consideration of the thousands of applications now on file.

Sights Increased Tanker Construction Costs

LONDON, June 15.—That tankers are going to cost more to build in the future was emphasized by J. D. Christie, chairman of Swan, Hunter & Wigham Richardson, speaking at the recent launching of the British Resolution, latest addition to the British Tanker Co. fleet.

He pointed out the past year's rise of costs and the anticipated continued rise, adding that British shipowners were telling him it would not pay to order ships at present prices. Orders taken before the rise in costs of materials and labor have brought losses to ship builders in recent months. The higher prices shipbuilders require might be 50 per cent or so more than a year ago, Mr. Christie said.

Modify Ill. Waterway Plans

WASHINGTON, June 28. — Congress completed action June 7 on a bill modifying plans for the Illinois Waterway between Lockport and Chicago, by substituting for the natural channel of the Calumet river a straight artificial channel between 130th and 139th streets, Chicago. The bill was sent to the President for approval.

To Dredge Neches River

NEW ORLEANS, June 28.—The U. S. Engineers Office, Galveston, received bids June 16 for dredging approximately 3,620,000 cubic yards of earth from the Neches river channel in the Sabine-Neches waterway, Texas. A total length of 20 miles from the mouth of the river to the entrance to the Beaumont turning basin is included.

Iowa Jobbers Seek New Distillate Structure

WATERLOO, Ia., June 28.—Elimination of the practice of selling one product at one price for tractor fuel and for light fuel oil was urged at the Iowa Petroleum Assn. meeting here recently.

A resolution was adopted urging the "market maker" to establish a price based on the use of the product.

One major company has an "all purpose" oil, sold for tractor fuel and for distillate. Jobbers seek a return to a separate price for distillate and for tractor fuel. In the discussion some jobbers spoke for a different price in the country and in town, while others urged a price based on the use of the product.

Oil Expo for California

TAFT, Cal., June 28.—Plans for an oil exposition in California are moving forward. The Pacific Oil Show and Black Gold Festival to be held at Taft, Kern County, Sept. 16 to 19, is expected to draw oil men from all over the country. The Taft area produces one-third of the state's total oil output. Oil is the town's only industry.

A permanent organization has been formed to stage the exposition. The Kern County Chamber of Commerce and the County Board of Supervisors have appropriated money for the preliminary work. The exhibition will be the state's first for oil.

Liquefied Petroleum Gas Sales Increased in 1936

WASHINGTON, June 28.—Market demand for liquefied petroleum gases, including propane, butane, propane-butane mixtures and pentane, increased 38.8 per cent in 1936 over 1935, exclusive of exports, according to reports compiled by the Bureau of Mines.

Sales of the gases for domestic use, gas manufacturing, industrial fuel and chemical manufacturing and fuel for internal combustion engines, totaled 106,652,000 gallons in 1936, compared with 76,855,000 gallons in 1935.

Exports increased from 4,237,000 gallons in 1935 to 4,897,000 gallons in 1936, a gain of 15.6 per cent.

Propane, because of its high volatility, is sold principally for domestic purposes (as "bottled gas") in homes where gas from gas mains is not available. Butane is used chiefly as an industrial fuel.

CINCINNATI, June 29.—The new diesel towboat Verona, owned by Earl Cooper, Parkersburg, W. Va., arrived in Cincinnati recently, where it will be used to tow gasoline.

When purchasing your fuel and furnace oil

requirements for the coming heating season, kindly bear in mind that BERRY'S specialize in domestic heating oils from both our seaboard terminals and Pennsylvania refineries.

Attractive quotations may be secured on range oil, No. 1, No. 2 fuel oil and kerosene.

Gasoline of high octane and specific distillation range are also available at all of our shipping points. Your inquiries will be appreciated on any commodities which you might purchase.

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Branch Offices: New York City; Chicago, Ill.; Boston, Mass.; Philadelphia, Pa.; Houston, Texas; London, England; Hamburg, Germany; The Hague, Holland.

Refineries: Oil City, Pa.; Emlenton, Pa.; Farmer's Valley, Pa.; St. Mary's, W. Va.
Ocean Terminals: Baltimore, Md.; Tiverton, R. I.; Dorchester, Mass.; Carteret, N. J.; Edgewater, N. J.; Glastonbury, Conn.; Philadelphia, Pa.

Two standard 10,000-barrel oil barges ready for delivery. The barges are 175 feet long and 40 feet wide. Barges of this size are common on the lower Mississippi

Oil Barges Are Modern Vessels Designed for Safety

By STUART D. BROWN*

• • •

THE past 10 years have been marked by a rapid increase in the use of barges for the transportation of crude oil and refined petroleum products on harbors and inland water ways. In more recent years, the tendency has been toward the use of all-welded steel equipment.

The new regulations of the Bureau of Marine Inspection and Navigation of the U. S. Department of Commerce sounded the death knell of obsolete wooden barges in tank service, and are a notable factor, coupled with the ever increasing interest of the owners in better marine equipment, in raising the standard of barge equipment used for transportation of petroleum products.

Increased stringency in the regulations for the building and operation of tank barges was welcomed by most responsible refiners and transporters of oil, since the operation of dangerous and inferior barges was frequently accompanied by annoying or serious cargo losses.

Under the new regulations, plans of all barges must be approved before construction is started, and the certificate of inspection issued upon completion must be renewed once a year. This insures safety of crews, cargo, vessels, and water side plants.

The use of all-welded steel construction in river and harbor barges offers several advantages for tank barges. Welded construction reduces the weight for a given strength or stress requirement and, therefore, permits the carrying of greater cargo at any given draft. It also reduces leakage and makes barges less subject to damage from scraping against wharfs or the walls of locks.

A further advantage of welded oil barges is greater ease in cleaning. A serrated type of welded construction is being used at some shipyards, with the entire foot of each serration of the frame continuously welded to the shell or the hull. This detail of construction facilitates cleansing at the locations where heavy oil, water, and sediment collect.

Serrated construction also makes it possible to remove a greater portion of the cargo, since the openings at serrations permit the free flow of oil between the frames. In addition to the regular lines for removing cargo, stripping lines are sometimes provided to insure the complete removal of the cargo, to cut the time required for cleaning, or to reduce contamination of a different type of oil which might be carried as a subsequent load.

The two most popular size barges for Mississippi river use are 175 by 35 by 8 feet, 6 inches, with a capacity of 7800 barrels, and 195 by 35 by 9 to 9 feet, 6 inches, with a capacity of 8600 barrels. Barges built for service on the New York State Barge Canal usually are 200 to 230 feet by 42 to 43 feet by 14 to 16 feet.

The majority of river barges have no living quarters but are provided with pumping equipment of various types. Those for use on the seaboard usually have living quarters.

While the cargo of a typical single skin oil barge is carried in compartments formed directly from the hull middle body, the rake end compartments are kept free so that any damage to the barge from collision cannot result in leakage of the cargo.

Where higher pressure is encountered,

*Dravo Corp., Pittsburgh.

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MOST TRUCK PER DOLLAR - LOWEST COST PER TON MILE

● From the sturdy, 1/2-ton Mack Jr up to the largest capacities in the world, the Mack line gives you truck value at its peak!

The Mack Jr brings a famous name to the low-price field—and with it the features that have made Mack the greatest name in trucking. Stamina—reserve strength—a margin of safety never before achieved in this price class!

And in the heavier hauling jobs, Mack retains its 37-year-old leadership in money-saving dependability and long-run economy. Before you buy any truck at any price, see the complete Mack line!

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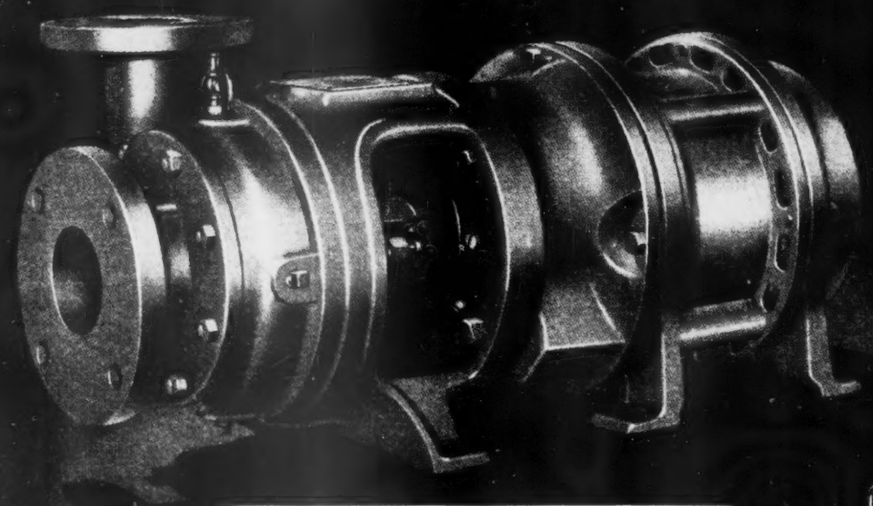
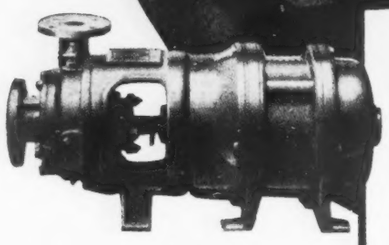
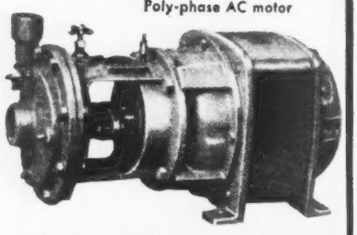
OPERATES IN ANY POSITION

ALL TYPES OF MOTORS . . .

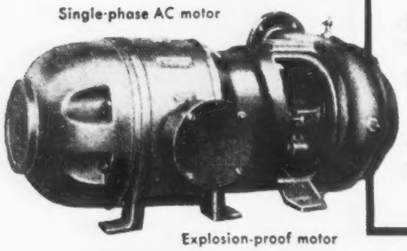




Poly-phase AC motor



Single-phase AC motor



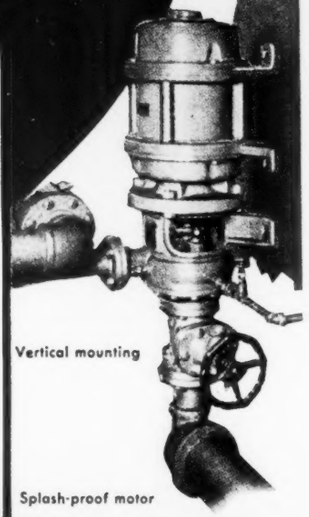
Explosion-proof motor

The compact Cameron Motorpump can be installed quickly and easily exactly where you need it in your plant. It operates in practically any position, and can be mounted on the wall, on the ceiling, on a tank, on the floor or as an integral part of other equipment.

It is available with a motor exactly suited to your electric current and service conditions. Motors are available for all usual AC and DC current conditions and in open, splash-proof, totally enclosed, fan-cooled and explosion-proof types.

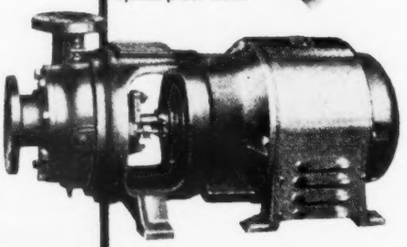
Capacities range from 5 to 1000 gpm. against heads up to 240 feet. Two-stage units are available for heads up to 500 feet.

It is highly efficient and thoroughly reliable. We believe it will help you cut your pumping costs.



Vertical mounting

Splash-proof motor



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as in natural gasoline, barges are equipped with separate cylindrical tanks resting on cradles at the bottom of the hull. This type of construction prevents undue strain on an ordinary hull. Ample clearance must be provided around the tanks for inspection or else provision must be made to lift the tanks from the cradles when inspection is required.

The principal safety features on the typical oil barge are expansion trunks, equipped with flame arrestors and with dependable vacuum and pressure relief valves. High and low air vents are provided on the non-carrying compartments, to guard against the possible collection of explosive mixtures of gases.

If barges are equipped with pumps and engines, they must also carry an adequate fire fighting system. Carbon dioxide systems are most effective and portable extinguishers are acceptable. If the pump engine is only covered by a light casing, providing access for repairs through removable panels, all work being done from the open deck of the barge, portable extinguishers can be carried on the tow boat. If the engine is located below deck in a separate compartment, a vented cofferdam must be provided between the cargo space and the engine compartment, and generally in this case, as well as when the engine is located in a compartment adjoining living quarters, even on deck, portable extinguishers must be provided at each compartment.

Some oil barges are equipped with steam smothering lines to further assist in fire fighting, assuming that steam is available from the tug doing the towing or from shore lines when the barge is alongside the dock. These serve also for cleaning. Temporary piping hook-ups are avoided, as well as the necessity for putting steam through cargo piping.

A satisfactory type of diaphragm expansion joint for the piping on oil barges has been used extensively. The pipe ends are run through holes in circular steel sheet discs, then welded inside and out, and the edges of the discs are subsequently welded together.

Considerable experimentation has been under way in the design of barges for dual purposes. It sometimes happens that barges carrying oil in one direction can secure a return cargo of a different type of material. The usual solution of this problem is to have the oil carrying space within the hull, and provision for carrying other cargoes such as grain, cement, or gravel above deck. Combination barges usually, however, become somewhat of a compromise between the best type for oil and the best for the other cargo to be handled.

Under the present regulations of the Bureau of Marine Inspection and Navigation, careful provisions must be made against any danger of leakage of fumes from the oil compartments to the above deck cargo space. A well ventilated cofferdam must be provided between the deck over the oil cargo space and the floor of the dry cargo space.

In addition to the natural economies of water transportation, a further advantage in the use of barges over railroad cars for many oil shipments is the fact the cooling effect of the water very materially reduces evaporation losses.

Hydraulic Internal Valves Make Bulk Plant Fool-Proof

CITY fathers, specifically, and residents, generally, of Colusa, Calif., were made happier recently as a result of engineering improvements installed by Richfield Oil Corp. at its bulk plant in this northern California town.

The plant has storage for 30,000 gallons and is located right in the middle of town on a site 50 by 120 feet at the back of a service station operated on the front part of the property. The three 10,000-gallon tanks are underground, but having this quantity of gasoline so close to home and mother caused a flutter of anxiety among the Colusans.

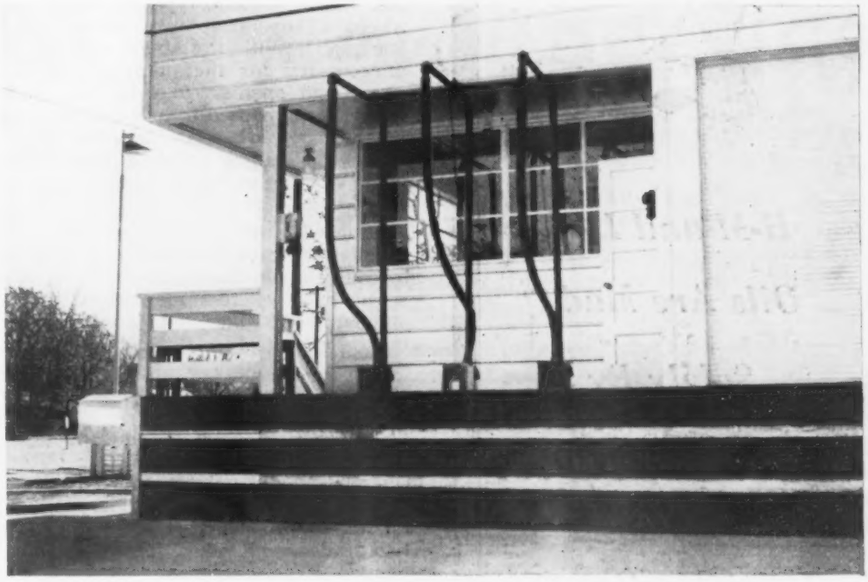
However, all fears were set at rest with the installation of what is looked upon as a fool-proof and nearly fire-proof system of bulk plant operation. H. O. Nicholls, chief engineer of Richfield's marketing operations, developed the set-up with the collaboration of A. E. Jurs, industrial engineer.

The system is built around the use of regular internal valves, hydraulically operated and placed in housing as a part of the flow lines from storage to loading facilities. In the Colusa installation, these valves were placed on the suction and discharge sides of the pumps, at the junction of the flow lines and the storage tanks and in the pipe risers at the loading rack.

These valves and the pump switches are operated through remote control conductors by a manual operator or controller placed conveniently at the loading rack. When the plant attendant wants to load a tank truck he pulls this operator which automatically opens all valves in that particular line and starts the pump through a magnetic control switch. When he is through he closes the operator which shuts all valves and stops the pump.

Pumps used in the Colusa plant are of the automatically variable stroke type. When attendant opens the operator, actual flow of gasoline does not begin until he opens the loading nozzle. The stroke of the pump adjusts itself to the actual flow going through the lines. This permits efficient loading to capacity. The pumps are 2½-inch, rotary, capable of delivering upward of 110 gallons per minute.

Fusible plugs are placed at strategic points along oil pressure line used in the hydraulic remote control system. In the event of fire, where the plant attendant had to run for his life and could not close



Bottom loading of trucking equipment is possible through the long flexible hoses used at the Colusa rack, which is built in as a part of the combination office, warehouse, and pumphouse. Manual operators for closing and opening valves and pump switches are shown. One of these, on the supporting post to the left of pipe risers, has a selector device for operating flow lines manifolded through the single pump. The single operator for the other pump and valves is located on outside wall to the right of the risers

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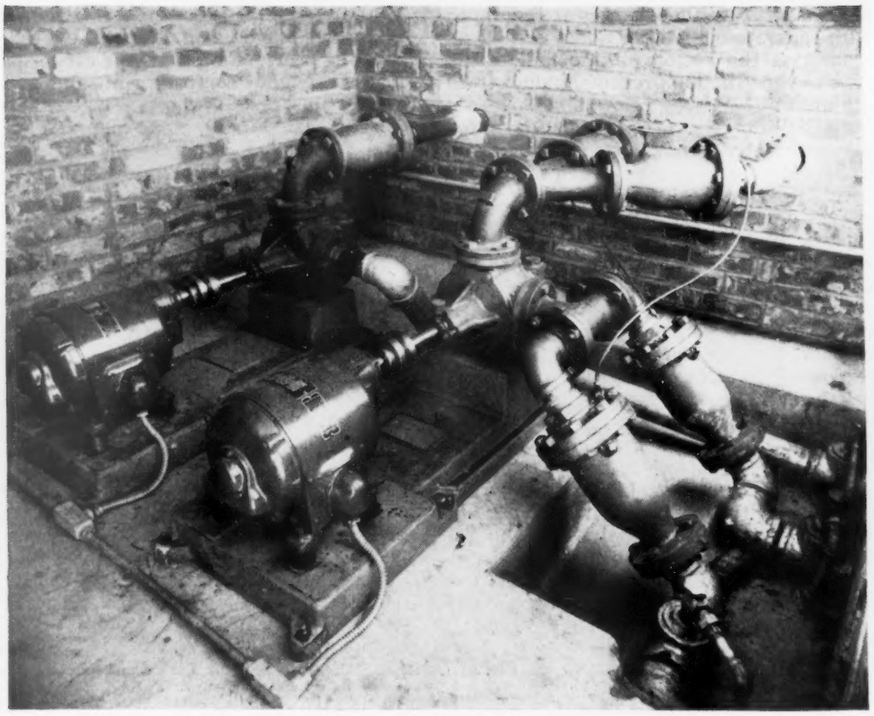

Part of the Richfield bulk plant installation at Colusa, Calif. Bulges in the flow lines on the suction and discharge sides of the pumps are special housings for hydraulically operated internal valves. The oil pressure line, which provides the remote control regulation, may be seen entering the valve housing. This line has fusible plugs at all vital points to safeguard the plant against fire. One pump is manifolded to handle two products

the manual operator, these plugs would melt and relieve pressure in the conductor line which would automatically close all valves and stop the pumps.

The system is equally adaptable to gravity flow from storage. The manual operator, which can be locked, may be located at the loading rack, dispensing office, or any other favorable point in the plant.

This feature gives it special merit for the small lock-up type of bulk plant where all operations are carried on by one man. With the single control, it is unnecessary for the plant attendant to go around opening four or five valves, which are supposed to be padlocked, and, by the same token, he does not have to make the rounds to close these valves when starting out on a delivery.

It is possible to use a selector in connection with the manual operator so that the flow from more than one tank can be controlled by the one unit. The Colusa set-up has two lines manifolded through one pump and controlled by two selections on the operator.

Where it is desired to load more than one product at one time, it is necessary to use an operator on each line. Richfield engineers have found it is almost as economical to use one pump on each commodity and point to the added safeguard against contamination, although mixing of products is very slight where two grades are handled through the single pump.

With the single operation three loading risers are used and painted with identifying colors which correspond to colors on the respective operators. In the Colusa plant, the hydraulic valves are put in the loading riser just below the platform and the fuse plugs are put above and below the platform in the oil pressure line.

All installations do not call for a valve in the riser. Where local ordinances do not ordinarily require a shut-off at that point, adequate control and safety is obtained by using the equipment on both sides of the pumps and at the storage tanks.

At the latter point, 3-inch internal valves open only when fluid is pumped out of the tank. They close automatically in case of fire and need no padlock. Three-inch hydraulic units are used on the suction side of the pumps with 2½-inch equipment on the discharge side and in the pipe riser.

Another advantage claimed for the use of the hydraulically operated valves in the flow lines is that any pressure which may develope in the lines or pumps as a result of expansion is automatically relieved by the equipment's spring action. This removes the need for separate bleeding systems.

The bulk plant building at Colusa is of modernistic design to conform with that of the service station. A combination garage and warehouse building, which also includes the office, is so arranged that a brick pump house with a reinforced concrete roof is incorporated into the general layout and yet insulated from it. This pump house is accessible from the outside only. The loading platform is really a porch on this building.

Bulk supplies to the plant are delivered from the San Francisco Bay area—a distance of approximately 150 miles—by tank truck and trailer. These are unloaded by gravity feed into the underground storage.

FARRELL Tank Trucks are giving *Efficient, Economical* Service

WHEREVER petroleum products are carried in trucks in every state in the union, in Canada, in Mexico, FARRELL truck tanks are to be found. Shown above is a fleet of eighteen new FARRELL truck tanks just delivered to Cuba.

FARRELL Modernized Truck Tanks are smart in appearance . . they possess outstanding advertising value. But more important, they are soundly engineered to render a high degree of efficient service. Many of the present day and generally accepted improvements in modern bulk haulage equipment originated in the FARRELL Research and Engineering Department. This ability, coupled with better than a quarter century of experience in tank building . . assures truck tanks of attractive design, safety, proper load distribution, maximum payload and lower "per gallon" haulage costs.

Every FARRELL Modernized Truck Tank is individually designed and CUSTOM-BUILT . . to meet the very specific need for which that particular unit is intended. FARRELL believes in building the tank to the job and not in trying to fit the job to the tank.

No matter whether your need calls for a single small capacity tank or a fleet of giant trailer trains . . FARRELL offers you individuality in Design, Soundness of Engineering, and Quality of Construction . . all backed by years of practical experience and an enviable reputation as producers of modern, efficient and long-lived bulk haulage equipment.

FARRELL MANUFACTURING COMPANY

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The nine fill tanks in the foreground are a part of the Star Oil Co.'s 2,850,000-gallon water terminal at Port Huron, Mich. Tank outlets are provided at both ends of the tanks to facilitate loading. The fill tanks range in capacity from 12,000 to 15,000 gallons

Jobber Cuts Plant Inventory With Water Terminal And Trucks

PORT HURON, Mich. FOR those who believe that the handwriting is on the wall for the independent jobber, this little story of the Star Oil Co., of Port Huron, Mich., should provide a rude awakening.

When J. F. Wilson, the president, and his partner, C. H. Kaiser, vice president, balanced the books at the end of their company's first year in the oil business, back in 1920, it was found they had sold 40,000 gallons.

In all probability, neither Wilson or Kaiser were bold enough to even dream that 16 years later, in 1936, their business would spill over the 8,000,000-gallon mark. Nor probably did they dream at that time that water transportation and motor transports would be instrumental in building that gallonage.

Yes, this is a "success story," and it is one that speaks in terms of a 2,850,000-gallon water terminal, two 4000-gallon transport trucks and 14 company divisions or territorial branches.

Wilson, who had been in the grain and grocery business for 10 years before entering oil marketing, remarked that his company has shown a profit every year since its beginning. Asked for the secret of his company's success, he hesitated a moment before answering, for, to Wilson, that question involved too many considerations to be answered hastily.

Finally the answer came out. He stated that his company's success is due to an interested personnel and to the personal acquaintanceship he and his employes have with individuals and industries in the community. Every employe owns stock in the Star Oil Co.

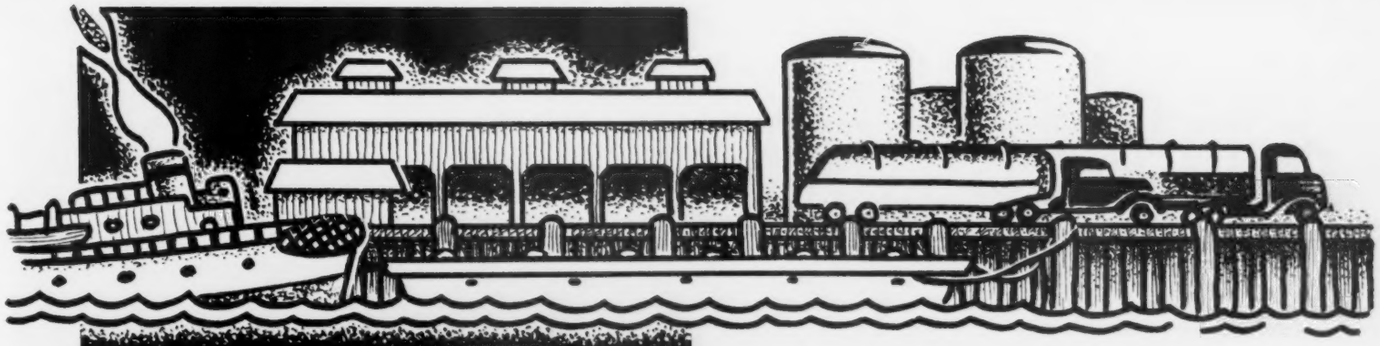
While it was agreed that these were contributing reasons to the company's success, it was evident that Wilson's operating methods would add more to the story, and more questioning brought that out. Into the Star Oil Co.'s success has gone an unusual amount of intelligent planning and thought. The most outstanding example of this, in recent months, has been its development of a new marketing plan.

J. F. Wilson, president of the Star Oil Co., Port Huron, Mich., in his new cruiser which is just about to take to the water for the first time

Under this plan, the 14 division managers of the company have been set up as jobbers, handling their own accounts, doing their own bookkeeping, and buying their supplies direct from the Star Oil Co. in Port Huron. The branch jobbers operate under their own names.

EACH branch jobber has as his only plant inventory five 1000-gallon underground tanks, plus the trucks he uses to serve his customers. Deliveries are made to customers by truck direct from Star's terminal at Port Huron, and the small undergrounds in each territory are used only as emergency storage to supply customers on short notice and to unload trucks which finish out the day or the trip from the terminal with only a small amount in their tanks. Thus the necessity of branch bulk plants is done away with. Gasoline, kerosine and distillate, in limited amounts, are stored in the underground tanks, and package goods are delivered direct from the Star terminal to the customer by truck.

This plan has made it possible for the Star Oil Co. to reduce its bulk plant inventory from approximately $5000, to $500 per plant. All the company's bulk plants have been dismantled, and, with



FOR ACCURATE LOADING AND UNLOADING OF TRANSPORT TRUCKS

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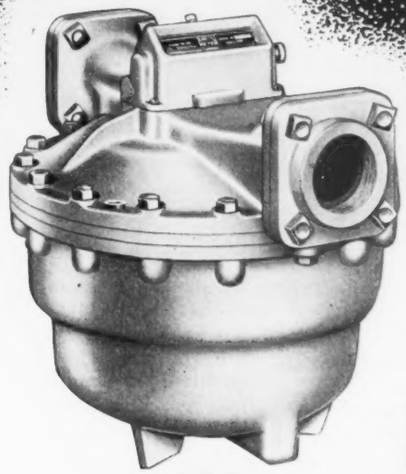
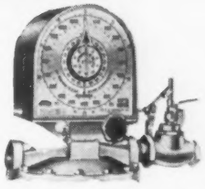


The large Swivel Dial is widely used for loading trucks.



The Automatic Dial delivers pre-determined quantities . . . saves time . . . assures accuracy.

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For water terminal operation, for loading and unloading transport trucks, for checking dumps to stations, choose Xacto Meter—made by Bowser, specialists in liquid measuring equipment for fifty-two years.

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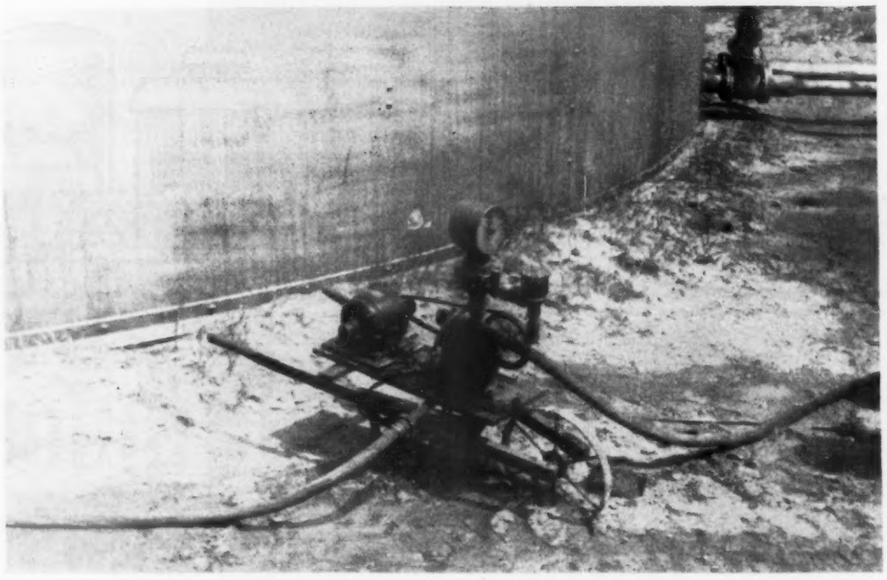


This type of portable pumping unit is used at the Star Oil Co.'s marine terminal for pumping out the bottom of the storage tanks, and at the 14 branch jobbing plants for pumping products from the underground tanks into the trucks. A ½-horsepower motor, provided with a long electric cord, supplies the power for the 1-inch 30-gallon per minute rotary pump

the exception of the underground tanks in the 14 branch jobbing territories, the only storage is in the trucks and at the Port Huron water terminal.

Before this plan was placed in effect, the Star company's storage at bulk plants totaled approximately 750,000 gallons. Today that storage has been reduced to about 70,000 gallons, a tribute to Wilson's and Kaiser's ingenuity and a proof of the ability of the water terminal and the motor transport to encourage stock turnover and reduce inventory. All of the Star Oil Co.'s branch jobbing territory is within a radius of 100 miles of the Port Huron terminal.

Wilson said that the reduction in inventory and in handling under the new marketing plan has cut the bulk plant losses to one-fifth of what they were formerly.

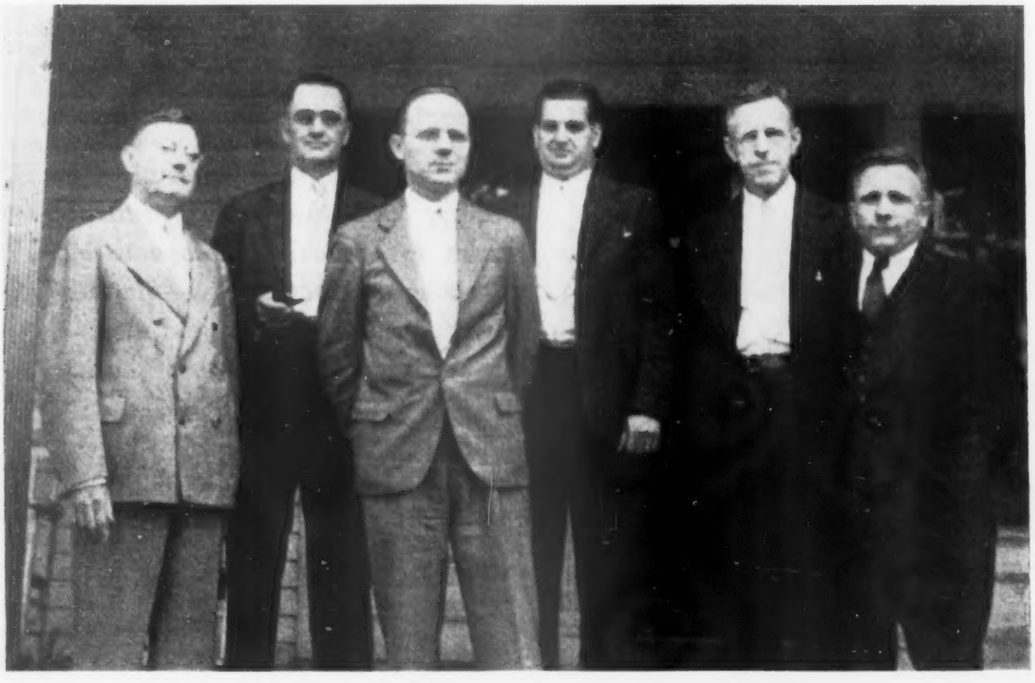
Each branch jobber's "underground bulk plant" is provided with a portable pumping unit to be used in pumping the tanks' contents into the truck tanks. The pump, a 30-gallon per minute rotary, together with a ½-horsepower electric motor, is mounted on a wheelbarrow. The pump and motor are joined by a belt drive. The motor is provided with a long electric cord so that it may be plugged in at any convenient point around the "plant."

One of these portable units is also employed for odd jobs around the Star terminal. One of its jobs is pumping out the bottom of the large storage tanks in cleaning operations or preparatory to filling the tank with another type of product.

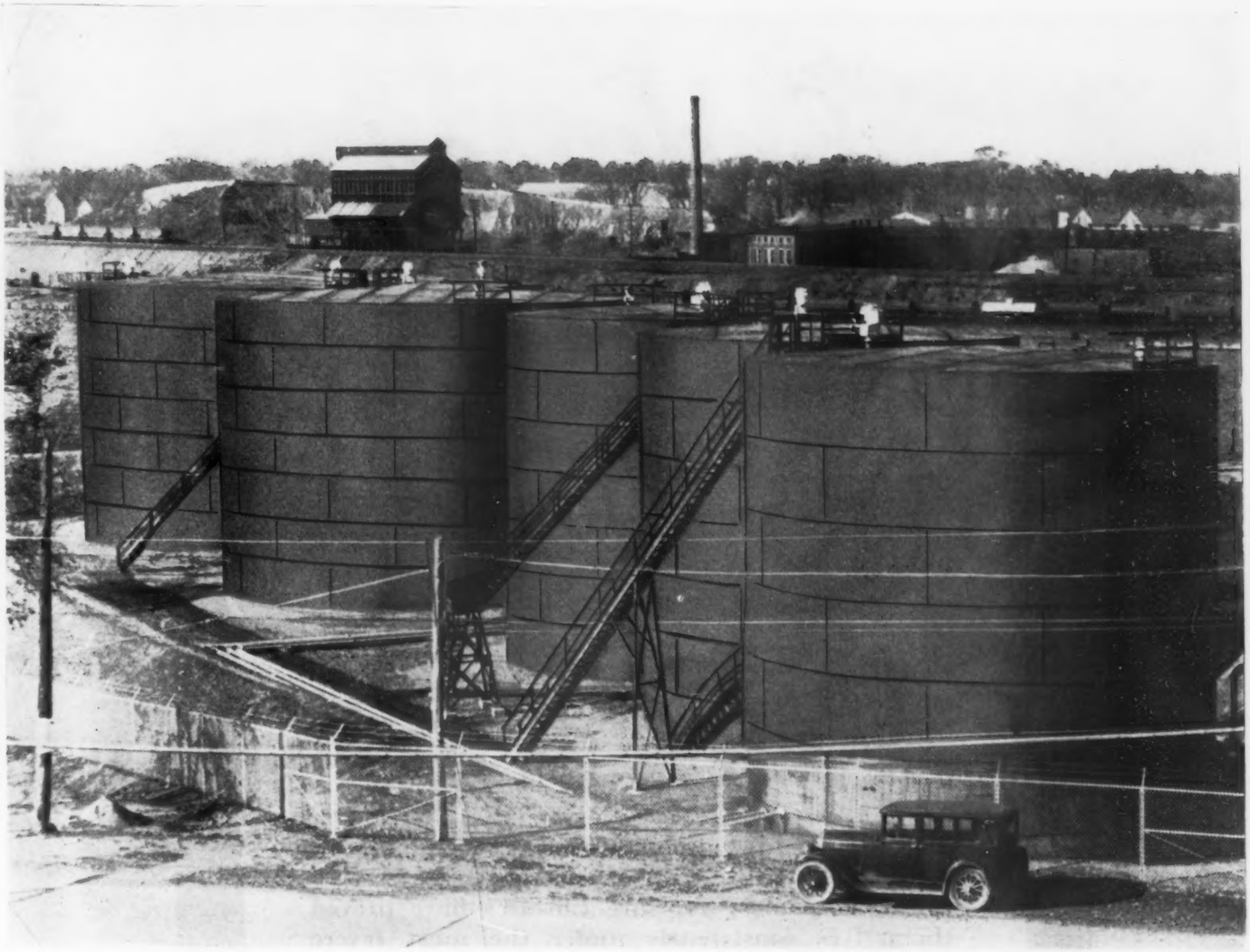
The Star Oil Co. terminal is located at the point where Lake Huron funnels into the St. Clair river. Gasoline is brought by boat from Chicago. The tankage at the terminal consists of four tanks of about 400,000 gallons capacity each, one tank of about 1,000,000 gallons capacity, and nine fill tanks ranging in capacity from 12,000 to 15,000 gallons.

Wilson pointed out that one advantage of his terminal was that it enabled him to buy up surplus stocks at a good price and to store them until they would bring a profit.

His two 4000-gallon transport trucks are used in a number of ways. In addition to making special bulk hauls into the various branch jobbing territories, the trucks are often busy transporting to the terminal surplus stocks that the company has purchased from other jobbers or some other sources.



The election of officers at the annual meeting of the Fire and Safety Marshals of the National Petroleum Assn. at Bradford, Pa., June 16-17, produced the results shown above. From left to right they are: Dan J. Harvey, Pennzoil Co., Oil City, president; Harvey E. Elkins, representing the N.P.A.; S. M. Wolbert, Kendall Refining Co., Bradford, retiring president; C. H. Lindberg, Hyvis Oils, Inc., Warren, vice-president; Charles Noyes, Valvoline Oil Co., Butler, secretary; and R. T. Henderson, Standard Oil Co. of Ohio, Cleveland, treasurer



Leaders Choose Hammond Tanks

THE storage tanks shown above were fabricated and erected by Hammond as part of a marine terminal on the Penobscot River, in Maine. The storage in this terminal consists of five tanks, one of 35,000 barrel capacity, another of 20,000 barrels, and three others of 10,000 barrels each.

Our facilities and engineering department are also available to you. Your request for cooperation will imply no obligation. Our reputation and our tanks are known around the world—so truly it can be said—

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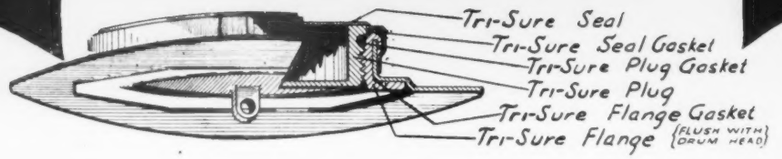

Tri-Sure Closures are being specified by a majority of the companies in the Petroleum Industry. To these companies, Tri-Sure Closures have proved themselves consistently under the most severe conditions of weather and transportation—along the waterways, on the rails, and on the highways of the world.

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These tank truck and trailer units operate between 120,000 and 150,000 miles a year, each, in transporting bulk petroleum—mostly gasoline from southern California supply points to inland consuming areas. By eliminating all auxiliary equipment not absolutely necessary to operating efficiency and safety, substantial increases in payload capacity are effected. This fleet is operated by the Reliable Transportation Co. The two units on the right are operated by diesel engines

Diesel Trucks Favored for Heavy Loads On West Coast

IT IS not difficult to start an argument any time of the day or night by injecting into the conversation of a group of truck operators a remark concerning the relative merits of gasoline versus diesel engine operation. No matter which side you take you are sure to have a lot of friends.

This difference of opinion is particularly evident on the Pacific Coast where use of diesel engines on trucks hauling bulk quantities of petroleum products and other freight is extensive.

There are about 450 pieces of truck and trailer equipment operating out of California supply points to bulk plants and sometimes service stations in the state and in adjacent states. Approximately one third of these are powered with diesel engines.

As a general rule the large fleet owner, who has the facilities and personnel necessary for economical and efficient maintenance of diesel equipment and who has the volume of business necessary to keep this equipment on the road, is found heading the lists of those favoring diesel operation.

One large operator makes the statement that the diesel truck does not begin to pay until it travels 60,000 miles a year. It is not uncommon for some of this equipment to average 10,000 miles a month, or 120,000 miles a year.

Perhaps the most outstanding item in favor of diesel operation has been the lower cost of fuel and an oversight on the part of the lawmakers in not including this fuel under provisions of the gasoline tax acts. Enactments passed at recent sessions of the various state legislatures have done much to remove this advantage, however.

The question naturally arises in any discussion of this nature whether diesel operation, as it is known today, would continue to be favored by even the large contract hauler if the cost of diesel fuel including tax, were increased to a parity with gasoline.

The management of Pacific Freight Lines, one of the largest operators of diesel and gasoline equipment on the west coast, has expressed the conviction that even though diesel fuel prices should advance to the point where the economic advantages the diesel motor disappears, the operating advantages are of such value that the use of this equipment would continue on all line hauls.

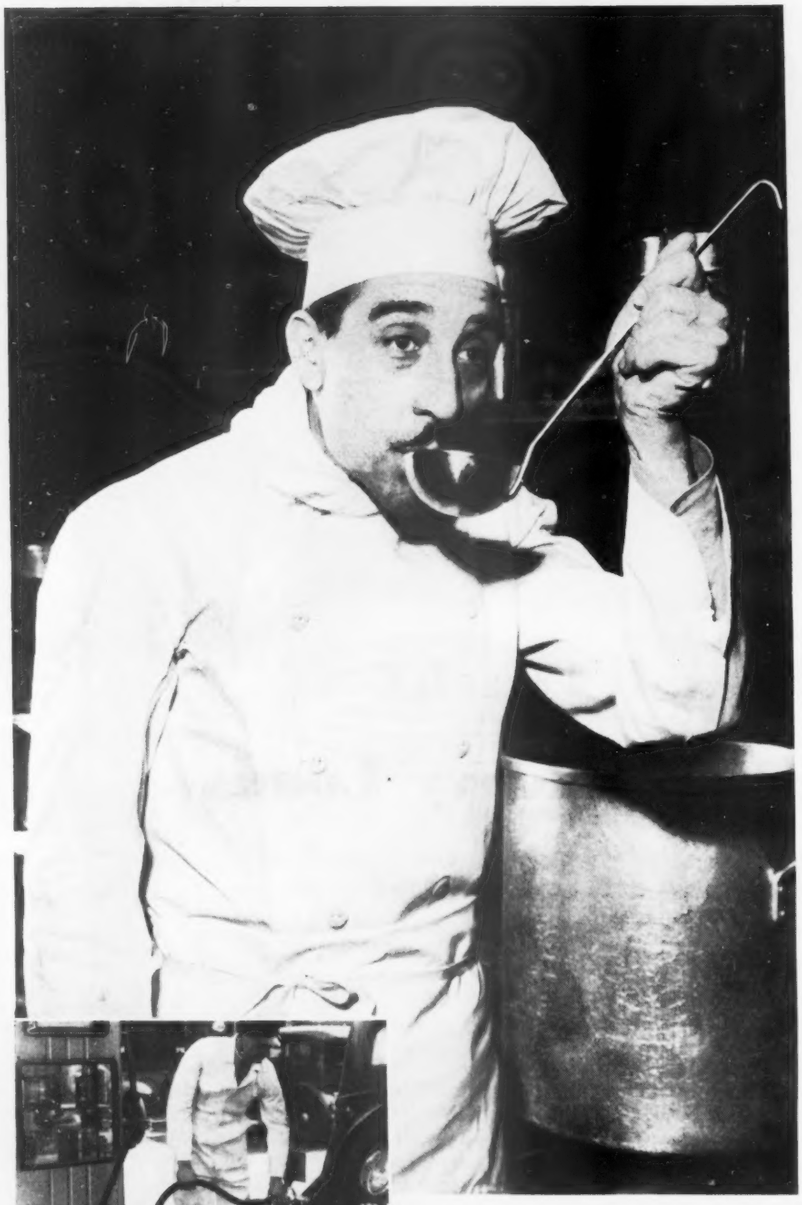
Additional power, the ability to move heavier loads at higher speeds over grades, the advantage of shorter time schedules between consuming centers where competition between truck and rail is keen, are included by this company among the operating advantages of diesel powered equipment.

C. G. Anthony, vice president and general counsel of this company, likes to delve into the costs of operating trucking equipment and as part of this study he analyzed every item of expense entering into the operation of motor equipment, including overhead, traffic solicitation, damage claims, terminal outlay and other expenses not generally included in truck costs.

The study covered the operations of 25 transportation companies operating in California and Arizona. The equipment in these 25 fleets ranged from a minimum of three trucks and trailers to a maximum of 63 trucks and trailers. In all there were 241 truck and trailer units, 85,613 truck days and 16,003,640 truck miles.

Of the total units included in this survey, 80 were powered with six-cylinder diesel motors and 161 were powered with gasoline motors of various makes. Each truck averaged approximately 187 miles per day for 250 productive days out of the year, with a load factor of 51 per cent.

The trucks were all of the six-wheel variety, with average tare weight of 17,900 pounds and allowable gross weight of



WHY SOUP *a-la-Henri* COSTS 75¢

A few vegetables...some meat stock . . . cook slowly. The famous soup chef will tell you what he uses . . . tell you it is simple. But not a cook in a county can duplicate the flavor of the soup he turns out. They can't because his *knack* can't be imparted with the recipe.

The same difficulty stands in the way of duplicating the quality of DELMAR-DB Gasoline Pump Hose . . . developed by Electric Hose & Rubber Co. Others can buy and use synthetic materials in a lining compound, and follow the "recipe" for making a flexible yet durable hose carcass. But the "*knack*" of making pump hose with a smooth, gasoline-proof lining so it is just right...so it will live-up-to its claims of reliability, greater efficiency and economy . . . is an ingredient that can't be bought or given away. This *knack* is an inherent skill, slowly developed during the four years and more that "Electric Hose" spent in pioneering and perfecting the compounding and construction processes and equipment to produce this revolutionary hose.

That exceptional skill or *knack* may not be apparent when you look at DELMAR-DB. But it will show-up clearly in long-run performance. It is a valuable safeguard that removes the gamble when you adopt this new type of hose for your pumps. We have an interesting bulletin that gives facts to prove it. Write for a copy.

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A three year service record has proved that DELMAR-DB lives-up-to all claims . . . provides all these advantages in full measure: 1. GASOLINE-PROOF TUBE . . . made of a superior lining compound in which Neoprene is one ingredient . . . smooth, fast-discharging. 2. DURABLE, COST-CUTTING CONSTRUCTION . . . resistant to crushing . . . easily and quickly restored to shape, even if accidentally deformed. 3. TOUGH, MAR-PROOF COVER . . . specially compounded to resist abrasive wear and weather . . . needs no guard . . . won't mar paint on pumps or cars. 4. FLEXIBLE AS A ROPE . . . permits fast handling, even in wet or cold weather. 5. WEIGHS 40 PERCENT LESS . . . more help in fast work. 6. UNIQUE, PROTECTED STATIC-WIRE . . . a heavy, spirally wound wire is embedded in the hose carcass . . . protected from breakage and corrosion. 7. SEAL OF UNDERWRITERS' APPROVAL ON EVERY HOSE.

DELMAR-DB . . . PRODUCT OF ELECTRIC HOSE & RUBBER CO.

TABLE 1

Fixed, Miscellaneous and Variable Costs for Truck and Trailer Operation

		6-Wheel Diesel Truck	6-Wheel Gasoline Truck	6-Wheel 10-Ton Trailer
A	**Fixed Cost (Dollars per Year)**			
1	Fixed overhead (See Table 2)	$1,722.50	$1,722.50	$.....
2	Federal old-age benefit	42.89	42.89	.....
3	Federal unemployment compensation	85.79	85.79	.....
4	Insurance compensation	11.00	11.00	.....
5	Insurance Theft (½ investment)	10.62	9.12	3.75
6	Insurance P.D.—$50,000	142.18	142.18	106.62
7	Insurance P.L.—(100 M to 300 M)	287.70	287.70	217.76
8	Insurance Fire (on ½ investment)	72.25	62.05	25.50
9	California Weight Fee and License	73.00	73.00	73.00
10	Arizona Weight Fee and License	189.50	189.50	150.30
11	Drivers' wages (75 cents per hour)	2,250.00	2,250.00	.....
12	Total fixed charges per year	$4,887.43	$4,875.73	$ 574.93
13	Add trailer costs	574.93	574.93	
14	Truck and trailer combined	$5,462.36	$5,450.66	
15	Total cost per day (250 days)	21.84	21.80	
B	**Miscellaneous Items**			
16	Cost delivered with body	$8,500.00	$7,300.00	$3,000.00
17	Replacement tire cost	720.00	720.00	614.00
18	Turn-in value, 5% of cost	425.00	365.00	150.00
19	Amount to be depreciated	7,355.00	6,215.00	2,236.00
20	Cost per gallon of fuel	.0396	.1376	.....
21	Cost per gallon of oil	.4802	.4802	.....
22	Cost per tire and tube	72.00	72.00	51.00
23	Number and size of tires	10-40x8	10-40x8	12-38x7
24	Miles per gallon of fuel	6.01	3.25	.....
25	Miles per gallon of oil	150	160	.....
26	Empty weight (pounds)	18,100	17,375	10,840
27	Net payload (pounds)	15,900	16,625	23,180
28	Allowable gross weight (pounds)	34,000	34,000	34,000
29	Estimated economic life (miles)	450,000	400,000	500,000
C	**Variable Cost (Dollars per mile)**			
30	Fuel (Item 20 divided by item 24)	$.00659	$.04234	.....
31	Oil (Item 21 divided by item 25)	.00320	.00300	.....
32	Tires and tubes	.01336	.01336	.00821
33	Maintenance	.03319	.03362	.00915
34	Depreciation (Item 19 divided by item 29)	.01634	.01553	.00447
35	Total variable cost per mile	$.07268	$.10785	.02183
36	Add trailer cost	.02183	.02183	
37	Total for truck and trailer unit	$.09451	$.12968	

34,000 pounds. The trailers, also six wheels, had an average tare weight of 10,840 pounds and allowable gross weight of 34,000 pounds. The combined unit had a payload capacity of approximately 20 tons.

Average cost of operating truck and trailer units, in which the greater portion of the hauling consisted of liquid petroleum products in bulk, shown in Table 1.

The fixed costs are those incurred independently of miles traveled by the equipment and vary inversely with the miles traveled. The variable expense items arise only when the trucks are in use and vary directly with the number of miles traveled.

If cost of diesel fuel, as shown by this study, increased 347 per cent to the same cost as gasoline there would still be a saving of nearly 50 per cent in the fuel cost of diesel operation. By the same analysis, cost of diesel fuel would have to advance 642 per cent before the fuel cost per mile would be equal for the two types of equipment, and the cost of diesel fuel would have to increase 490 per cent to equalize the two costs of operation.

Fixed overhead cost for truck and trailer operation, as developed from this study, is shown in Table 2.

Average mileage for the fleet on a yearly basis was 47,000 miles for each truck. A few of the units operated in excess of 100,000 miles and several, on short hauls in the Los Angeles Basin, operated only 8000 miles per year.

For all yearly mileages, up to and including 60,000, wages for drivers were regarded as a fixed charge of 75 cents per hour, for 12 hours a day, as shown in Table 1. In excess of 60,000 miles per year, this factor was regarded as a variable amount of $.0375 per mile, which is equal to 75 cents per hour at a speed of 20 m.p.h.

Cost of maintaining diesel and gasoline-powered truck and trailer equipment was indicated as shown in Table 3.

After looking over the results of this study a call was made on one of the comparatively small tank truck companies operating out of the Los Angeles Basin. The outfit selected was The Reliable Trucking Co., operated by Roy G. Hoover, who says the name is their motto. This company fitted into the survey of bulk transportation systems on the Pacific Coast because it was spoken of as an example of efficient operation and because it combines the use of gasoline and diesel powered equipment.

TABLE 2

Cost Per Day Per Truck and Trailer Unit

	High	Low	Average
Garage and yard rent	$3.07	.15	.82
Office rent	.66	.04	.15
Insurance (other than vehicle)	.34	.02	.16
Taxes (other than vehicle)	.43	.12	.28
Depreciation (other than vehicle)	.86	.04	.34
Maintenance building and tools	.24	.02	.04
Salaries—terminal employees	1.80	.30	.60
Salaries—management and office	6.54	1.34	2.43
Salaries—solicitors	1.70	.08	.28
Telephone and telegraph	.66	.16	.35
Office supplies and expense	.48	.06	.13
Legal and auditing	.59	.03	.31
Claims—short and damage	.30	.00	.13
Miscellaneous	2.40	.27	.86
Total per day			$6.89
Total per year (250 days), item 1, Table 1			$17722.50

Mr. Hoover operates six tank truck and trailer units as a contract hauler available to any shipper of petroleum products. Two of the units have diesel engines and four gasoline. The smallest capacity of the combined units is 6250 gallons—on the diesel equipment and the largest is 6400 gallons. Each tank has one compartment, except that the front end of the truck tank is partitioned off by double bulk-heads to hold 125 gallons of fuel for the engines.

No auxiliary fuel tanks are carried. Every item of surplus equipment is eliminated as a means of increasing the payload capacity.

Each truck operates between 120,000 and 150,000 miles a year. This high service factor is possible because 95 per cent of the hauls are in interstate business between Los Angeles Basin points and Arizona.

RIGHT at the start Mr. Hoover said he did not think his method of operation and what he thought of the respective merits of the two power types of operation would be of much interest. He ran his business along lines indicated by long experience, he said, with special emphasis on certain items and not much bother about others.

In speaking of his two diesel units, which were admitted to have been purchased as an experiment, he had found several disadvantages from the standpoint of his method of operation.

His experience has been that the diesel units cost more for maintenance, cost more to operate, have a lower payload capacity because of the heavier engine, and lacks compression, which causes greater wear on tires and brakes going down hill. He likes the additional power on hills, but most of the country his equipment travels over is comparatively flat.

He says that the diesel trucks have not gained a trip a month over the gasoline-motored equipment and carry less gasoline. Approximately $18 is saved per round trip to Phoenix, Arizona, with the diesel but 5 cents a gallon is charged by Arizona for all diesel fuel carried across the state line. The gasoline truck has a 50-gallon allowance on which no tax is paid to that state.

This operator has also found it necessary to change motor oil every trip on the diesel equipment, whereas an oil purifying system on gasoline equipment permits the unit to be operated upward of 20,000 miles without an oil change.

On the matter of maintenance, it has been Mr. Hoover's observation that the average tank truck driver is entirely inadequate in making even a minor repair to diesel motors while on the road. Even if such minor repairs can be made by the driver, maintenance is high if it is necessary to employ a full-time mechanic who is familiar with diesel engines to

take care of a few pieces of equipment. The small operator, Mr. Hoover says, cannot afford this additional overhead.

Initial cost of the diesel transport units owned by this operator was about $13,000 each. The gasoline units ranged from $9500 to $9800. His cost of diesel fuel is now 4 cents a gallon, against 14.5 cents for gasoline. He gets 5.5 miles per gallon with the gasoline motor and 7.5 miles per gallon with the diesel.

Each piece of equipment makes about 10 round trips between Los Angeles and Arizona points a month during the summer and about 12 trips during the winter. Average shipments throughout the year approximate 350,000 gallons a month, or 4,200,000 gallons a year.

To maintain this schedule, every care is taken to keep all equipment in prime condition. This has made it possible to get 300,000 miles on a motor—gasoline—before turning it in on a new power plant. One gasoline engine operated better than 220,000 miles, never had the valves ground or any major repair made.

TABLE 3

	Diesel truck	gasoline truck	6-wheel trailer
Number of pieces of equipment	80	161	241
Truck days operated	28,437	57,176	85,613
Miles operated	5,402,630	10,601,610	16,003,640
Expense		**Cost per mile**	
Grease and wash, material	$.00066	$.00066	$.00048
Grease and wash, labor	.00087	.00087	.00051
Tire and tube repair and maintenance	.00106	.00112	.00115
Repair, parts and labor	.02801	.02809	.00603
Battery maintenance	.00051	.00017	.....
Garage overhead	.00208	.00271	.00098
Total maintenance, cost per mile, item 33 Table 1	$.03319	$.03362	$.00915

About 10 sets of spark plugs and 3 sets of points were needed, however.

Much of this operator's success can be laid to his ability to get greatest possible payload on his equipment. He uses 20 by 9.75 tires in most instances, as against 22 by 9.75 tires used by other operators. Tire size plays an important part in this type of hauling because a tire, tube and wheel of the latter size will weigh about 200 pounds more than the 20 by 9.75. This is equivalent to about 33 gallons of additional payload each, or nearly 700 gallons for the 20 wheels.

The front, or steering wheels on this equipment are 10.50 by 20 to give additional mileage and to set up the front end as an aid to draining the truck tank.

ANOTHER saving in weight is the elimination of aprons, running boards, side gasoline tanks or other auxiliary equipment not absolutely necessary to efficient operation. It was possible to save about 650 pounds, or increase the payload capacity 100 gallons by removing these deadweight articles. Still another saving of 1000 pounds, or about 175 gallons, is made by the use of high tensile steel in the trailer frame.

In contrast to the usual, 6000-gallon load, this operator has effected savings in weight that add 350 gallons to this payload capacity. His gasoline powered equipment handles 2700 gallons on the truck and 3650 gallons on the trailer.

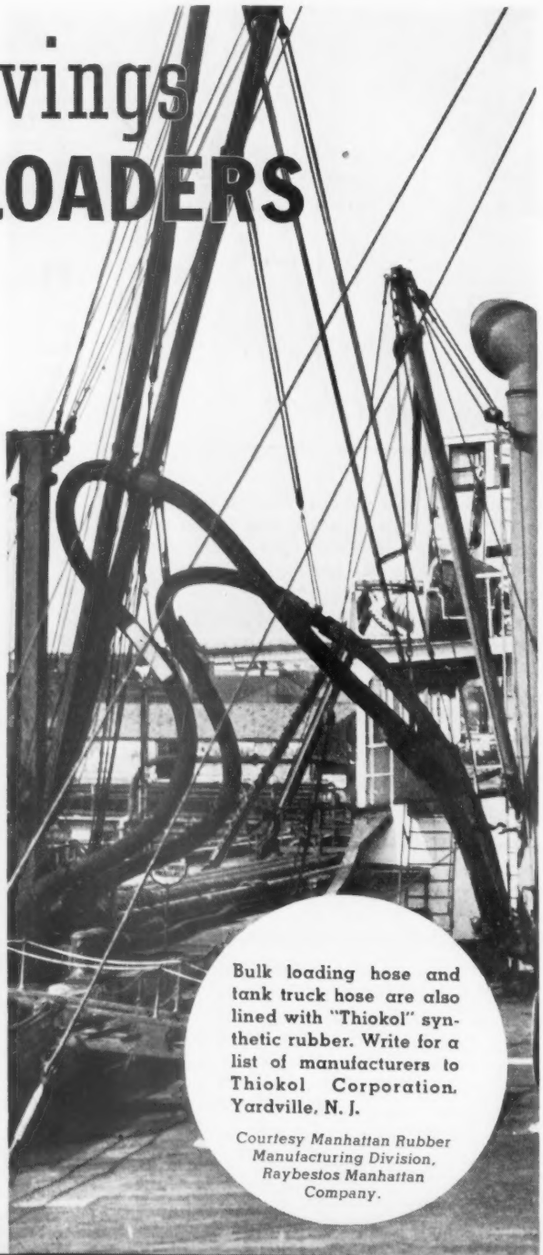
This operator has run 8 out of 12 tires on a trailer for a distance of 185,000 miles. He mounts his own rubber because he will not risk the delay and possible damage caused by flat tires resulting from stones, pliers, screw-drivers, or other odds and ends left in the casing. He is careful to remove most of the soapstone powder on the inside of the casing because he has found that this substance tends to lump into a ball and damage the tube beyond repair.

In mounting 10.50 by 20 tires on the front steering wheels, he has found it possible to get three times the mileage possible with a size comparable with tires on the other wheels. The larger size on front is particularly important with the diesel equipment where the engine weighs about 4900 pounds, compared to 3900 pounds of the average gasoline motor.

All wheels are dual in most instances, except the front two on the truck. In some cases single wheels are used on the dolly axle, which is on axle back of the truck driving axle. The dolly axle carries 35 per cent of the load at this point and the drive wheels 65 per cent. A stop light is connected to the dolly wheels so that if the tires lose air a signal will light in the cab as a warning to the driver.

One spare is carried. However, because it is possible to single on the front wheels

Direct Savings FOR OIL LOADERS



Bulk loading hose and tank truck hose are also lined with "Thiokol" synthetic rubber. Write for a list of manufacturers to Thiokol Corporation, Yardville, N. J.

Courtesy Manhattan Rubber Manufacturing Division, Raybestos Manhattan Company.

● **Extending the life of your hose and shortening loading time are within easy reach with smooth bore cargo hose.**

The new hose is lined with "Thiokol"* synthetic rubber. In place of the usual non-oil-resisting rubber tube, a "Thiokol" tube is bonded to the carcass. No oil comes through this lining. No flaking or disintegration occurs. The result—uninterrupted and longer service than your non-oil-proof cargo hose is giving.

This hose is lighter in weight, more flexible, and handles easier. "Thiokol" eliminates internal wires and fabric used to protect rubber tubes in ordinary hose. This gives a smooth bore which lowers friction losses and shortens your loading time.

Next time you order cargo hose, specify "THIOKOL" LINED SMOOTH BORE and take a bonus in cash and time in oil loading.

* "Thiokol" is the trademark used to designate products manufactured by Thiokol Corporation.

"THIOKOL"

OIL PROOF SYNTHETIC RUBBER

of the trailer and on the dolly axle, actually five spares are available.

Operations are carried on, in making the run between Los Angeles and Arizona points, by means of a station for relief drivers at Blythe, California. One driver takes the truck and trailer unit to this point where the relief takes over, delivers the cargo and returns to Blythe. The original driver returns the empty to Los Angeles.

The equipment is operated as far east at Tuscon, Arizona, which is 480 miles from Los Angeles, and to Phoenix, which is 411 miles. The round trip to Tuscon takes about 60 hours and to Phoenix the round trip is 50 to 55 hours. Although a fairly constant speed is maintained, the trip time will vary due to delays enroute.

Operations of this commercial hauler is an example of a business that was built on service that was possible only through the use of most modern equipment, kept up to the minute but free from any dolling up that might reduce the payload capacity. Although the experience in this case has not been entirely favorable to diesel powered trucks, the general opinion of Pacific Coast truck men in contemplating developments to come is that continued improvements in diesel design and operations will favor the greater use of this equipment.

This is expected to be particularly true where heavy loads are to be moved over grades in competition with rail traffic.

Oil-Coal Blend For Marine Fuel

LONDON, June 20.—Combined coal and oil in the form of colloidal fuel—powdered coal suspended in oil—has been reported used with sufficient satisfaction by Cunard White Star ships that it is considered probable a well-capitalized company will be formed to undertake manufacture.

A mixture of 60 per cent crude oil and 40 per cent coal is used. One of the chief problems delaying commercial production has been sedimentation of the pulverized coal. It was desired to find a chemical addition agent which would make the fuel set like a jelly when stored but behave like a liquid when pumped or vigorously agitated. Early starting of commercial production is believed to be an indication of solution of this difficulty.

Engineers of the Wallsend Slipway and Engineering Co. and researchers of the Fuel Research Station of the Department of Scientific and Industrial Research have spent five years on the problem.

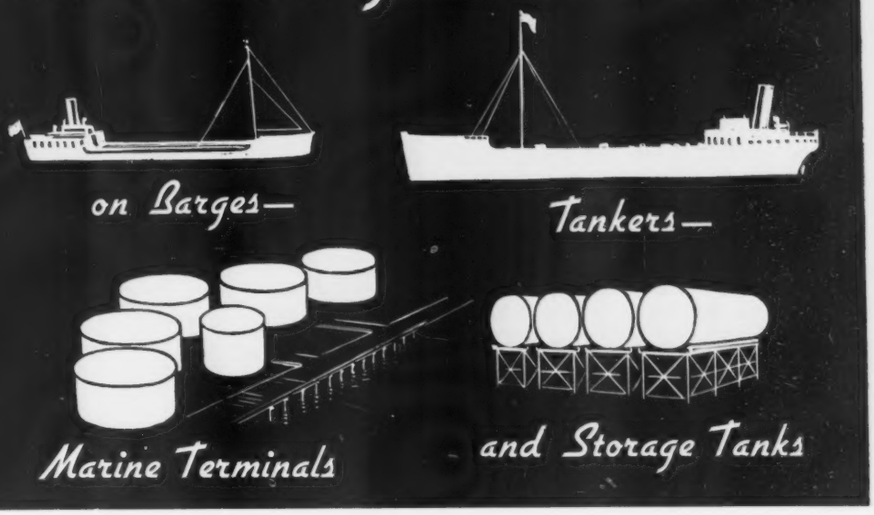
Barge Is Station Dock

A new steel barge is being used by K. A. (Kenny) Head, commission agent of the Sinclair Refining Co., in the rear of the company's station at Cape Girardeau, Mo., as a landing dock for boats in need of petroleum products or other supplies. The dock is even equipped to handle mail, telegrams and telephone messages to or from passing boats and to supply drinking water.

Boiler Barge

Shell Oil Corp. is having a boiler barge built by the Pennsylvania Shipyards, Inc., Beaumont, Texas. It will measure 118 by 44 by 10 feet.

OCECO Fittings will reduce your losses . . .



● To engineers and company officials interested in minimizing evaporation losses and waste; and increasing their profit margins on barge and tanker shipments—and marine terminal and bulk plant operations—Oceco offers a complete line of vapor conservation and fire prevention equipment—proven in service.

Oceco Vents, for instance, conceived and perfected by Oceco engineers and constantly modified to meet the changing requirements of the industry, are widely used in water transport and on storage tanks. They control tank breathing, prevent the free circulation of air, and amortize themselves—usually in a few months' time. Oceco Meters record receipts and shipments with permanent and unvarying accuracy. Oceco Flame Arrestors, with their enviable service record, are a positive flame stop.

Let us send you more complete details of the more efficient and more economical operation that follows the installation of Oceco Vents, Oceco Gauges, Oceco Manheads, Oceco Meters, Oceco Swing Lines, Oceco Flame Arrestors, etc.—and the savings they can make for you. It will pay you to get for your plant the many advantages of Oceco's serviceable design and exacting manufacture!

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Drilling Campaign in West Texas To Protect Ten-Year Leases

By **LAWRENCE E. SMITH**
N. P. N. Staff Writer

TULSA, June 26

IT WAS 10 years ago that the big leasing campaign that covered most of the counties in West Texas hit its best stride. There had been enough discovery, well distributed, to cause companies to take up thousands of acres.

Nearly all the acreage so leased was for 10-year periods and in that is the answer to the heavy development going on there today. It is particularly the explanation of the fact that, in what is broadly termed West Texas, there are about 165 wildcats carried on the list today. Not all are active, as some are based on hope rather than on geology and promoters who deal chiefly in hope have some difficulty in getting money. But the most of the wildcats are active, hurrying to hold an expiring lease which the landowner refuses to renew. On many of these the landowner will wish he had renewed and continued to draw his rentals because the well will be dry; but it is likely that a number of new pools will be found through the search now going on.

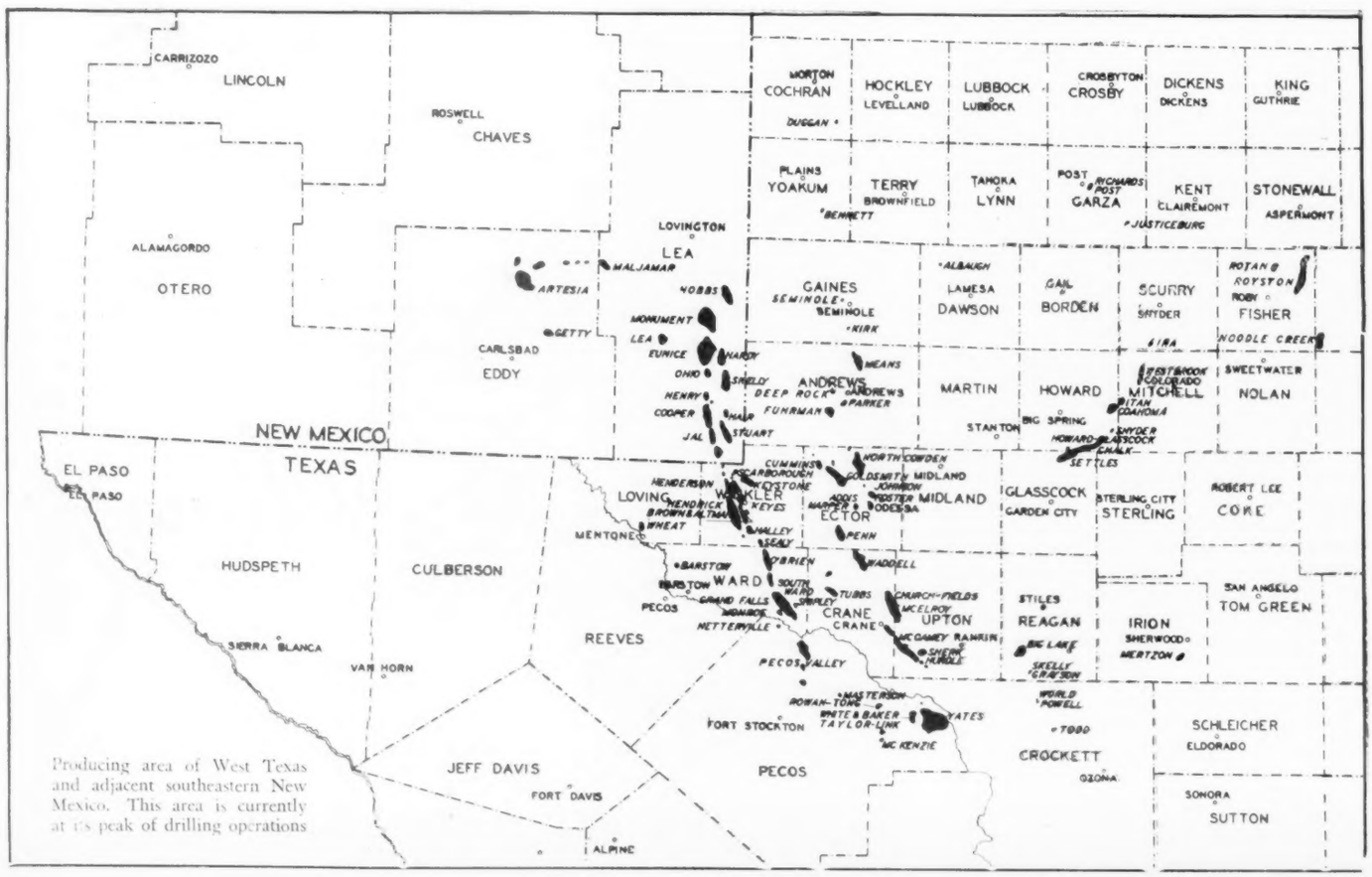
A recent drilling report lists the number of wildcats in West Texas counties as follows:

Andrews	11	Jeff Davis	1
Bailey	2	Kerr	1
Blanco	1	Loving	9
Brewster	3	McCullouch	2
Cochran	2	Menard	1
Coke	2	Mitchell	2
Crane	16	Pecos	25
Dawson	3	Presidio	2
Ector	4	Reagan	2
Edwards	2	Reeves	2
El Paso	1	Schleicher	2
Fisher	4	Scurry	4
Garza	1	Stonewall	1
Gaines	11	Terry	2
Glasscock	3	Tom Green	3
Hockley	2	Upton	8
Howard	9	Ward	6
Hudspeth	1	Winkler	3
Irion	1	Yoakum	4

In this broad area the Railroad Commission of Texas recognizes 62 separate pools. Some are quite small, some are new in development and time will tell how important they will be. The entire area produced 204,950 barrels daily in April, the latest complete official figures available. There were 5975 wells, of which 2918—nearly half—produced by natural flow.

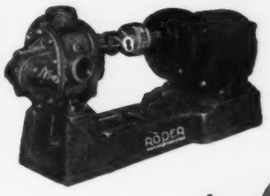
Chief producing fields in the area from the standpoint of past performance and their recovery to date include Big Lake, in Reagan county, discovered in 1932 and 1928, when deep Ordovician pay was found, whose cumulative recovery to Jan. 1 last was approximately 87 million barrels; Church & Fields, Crane county, 61,500,000 barrels; Gulf McElroy, Upton county, 40,000,000 barrels; Hendricks, Winkler county, 185 million barrels; Howard-Glasscock, in the two counties, 73.5 million barrels; Yates, Pecos county, the largest of them all, 223 million barrels and estimated to have greater recoverable reserve than the amount already produced.

The "play" in recent months has moved up into Gaines, Yoakum, Dawson and Hockley counties, where discoveries have been made, although they have not reached the stage of economic importance. The discovery early this year of Ordovician pay in the Waddell pool, Crane county, is further stimulus to the West Texas activity, which appears certain to continue for several years.

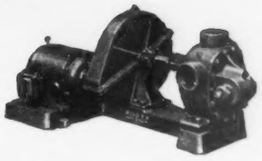


Producing area of West Texas and adjacent southeastern New Mexico. This area is currently at its peak of drilling operations

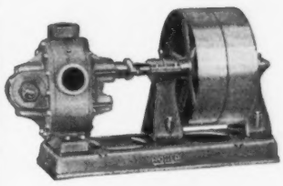
A VARIETY of pump mountings for every PRACTICAL need!



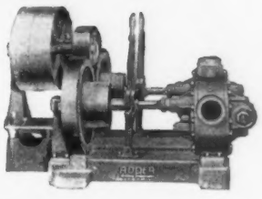
Geared Head Motor Drive



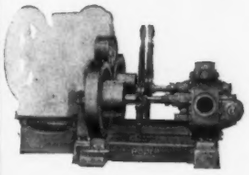
Standard Motor Drive



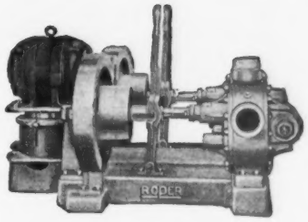
Belt Drive



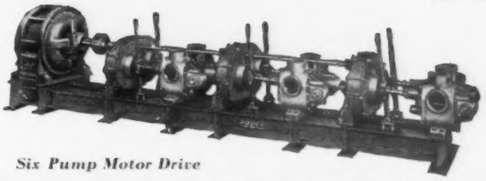
Twin Pump Belt Drive



Twin Pump Engine Drive



Twin Pump Motor Drive



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Capacities range from 1 to 700 G.P.M. per pump. "Built-In" or External Relief Valves can be furnished. For firewall installation, bedplate and driveshaft will be extended.

Roper Rotary Pumps are built RIGHT . . . priced RIGHT . . . and are giving DEPENDABLE day in and day out service to thousands of users. Save time and money in YOUR bulk plant . . . write today for Bulletin N-278 and prices! Geo. D. Roper Corp., Rockford, Illinois.

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Illustration at right shows the extreme simplicity of operation and construction in the Roper Pump. Only two moving parts—perfectly cut pumping gears—produce maximum mechanical and volumetric efficiency.

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- ★ Extra long large bearings
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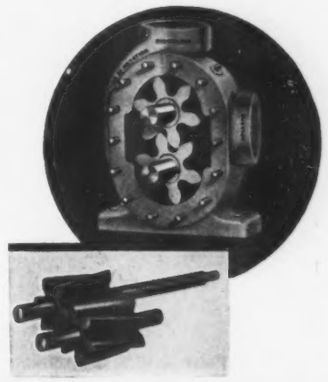

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Vane Type Hand Pump

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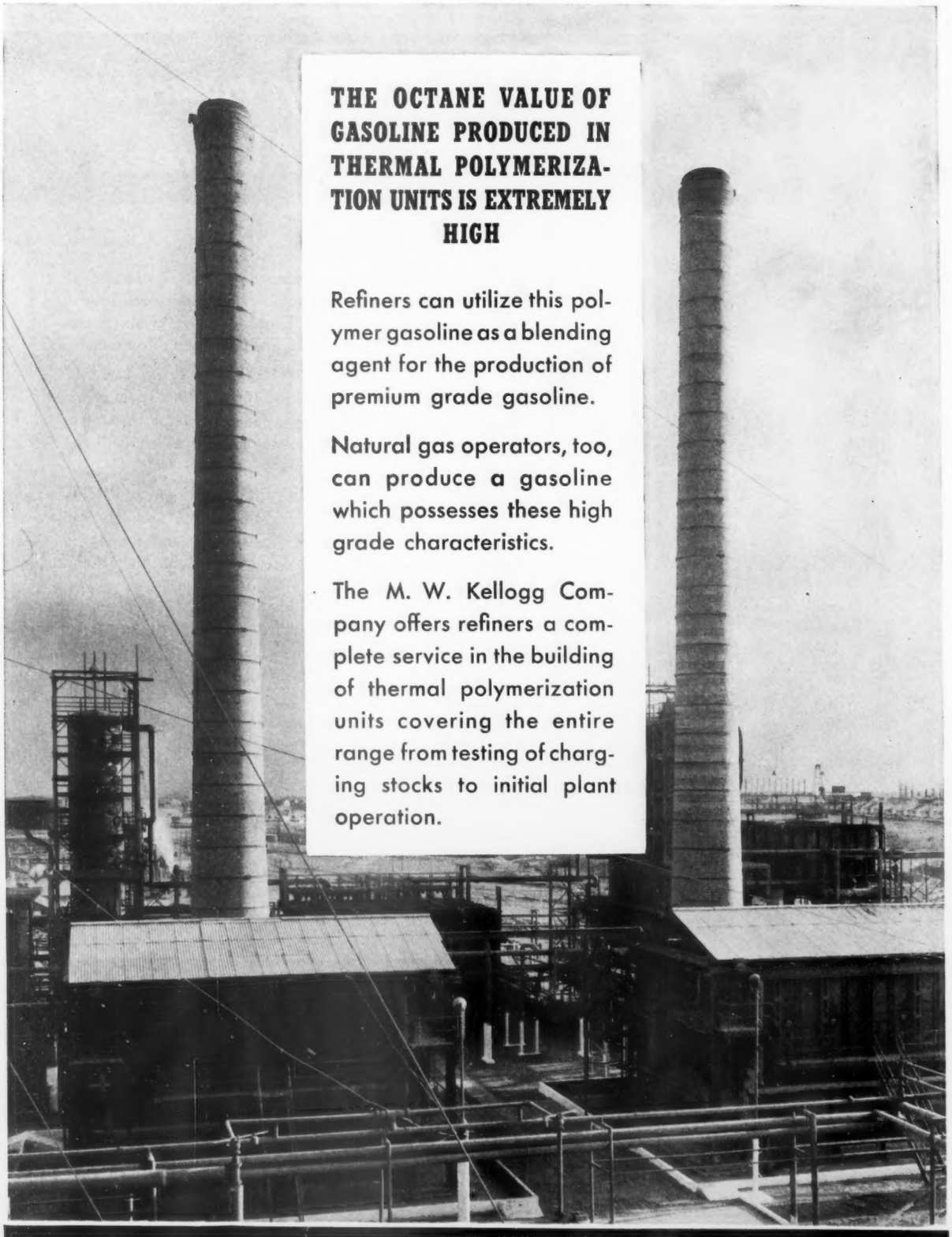

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Solvent Refining Of "Lube" Oils From The Operators Viewpoint

By V. A. KALICHEVSKY*, T. P. SIMPSON*, and B. W. STORY*

(Presented under the title, "Solvent Refining of Lubricating Oils From The Point Of View Of The Operator", before the Seventh Mid-Year meeting, American Petroleum Institute, Colorado Springs, June 2, 1937)

THE possibility of employing solvent methods for refining petroleum oils was first shown by Butlerov(1)† as early as 1870, but it was not before the beginning of this century that such methods were applied commercially—first for refining kerosine and later to the manufacturing of lubricating oils. Delay in the practical application of solvent-refining methods might be explained partly by the lack of cheap solvents and by the inadequacy of mechanical and constructional facilities in the past. Some delay was caused by lack of appreciation of the characteristics of solvent-refined oils, and also because the attention of the petroleum industry was absorbed for some years with the rapid development in distillation equipment and technique. In fact, it is probable that the economic success of solvent-refining processes is largely due to the great strides made in distillation practices immediately preceding the introduction of these processes.

The effects of aromatics on the burning quality of kerosines had been recognized for many years. The search for a method of removing them better than by acid refining led to discovery of the solvent power of liquid sulfur dioxide and the development of the Edeleanu process. Similarly, when it was recognized that many of the undesirable characteristics of lubricants were due to compounds of an aromatic nature, solvents were found which were capable of removing them from those oils.

A large percentage of the lubricating oils made from petroleum is intended for use in internal-combustion motors, and certain properties have become recognized as desirable in such oils. The more important of these properties appear to be a flat viscosity-temperature gradient commonly measured in terms of viscosity index, good resistance to oxidation, and a low carbonizing tendency. Various tests are used to evaluate oxidation resistance and carbonizing tendency. Oxidation resistance is hard to define, and no single test seems adequate to evaluate it. The carbon-residue test will be assumed as an index of the carbonizing tendency of an oil, even though it is occasionally misleading.

Lubricating oi's are a very complex mixture of large hydrocarbon molecules. The molecules may be considered as mostly hybrids consisting of aromatic or unsaturated rings,

*Socony-Vacuum Oil Co., Inc., Paulsboro, N. J.
†Figures refer to bibliography.

Technical Library For Sale

The technical library of the late Paul Wagner, of NATIONAL PETROLEUM NEWS editorial staff, containing several hundred books, reports, bulletins, etc. on petroleum geology and engineering, with a small number of refining and general subjects, has been made available for purchase.

These publications date principally from about 1915 to 1934 and include a large number of standard works, several hundred bulletins, reports, and surveys of the U. S. Bureau of Mines and of Standards and of the U. S. Geological Survey; reports on the geology of Texas, California, Oklahoma, Illinois, Indiana, Florida, and several other states; along with miscellaneous publications from various sources on the subjects.

Anyone interested in this collection may write for further information to Arch L. Foster, National Petroleum Publishing Co., 1213 West Third St., Cleveland.

Contents

Comparative Economics of Refrigerated and Pressure Light Oil Storage . . by W. B. Franklin 120

Careful study of the comparative costs of storing butane under different methods, during slack periods for use in heavy demand periods, and of increasing vapor recovery capacity.

Solvent Refining of "Lube" Oils from the Operator's Viewpoint . . . by V. A. Kalichevsky, T. P. Simpson, and B. W. Story 113

A careful survey of the principles governing the use of extractive solvents on lubricant fractions, and the limitations of these aids to refining.

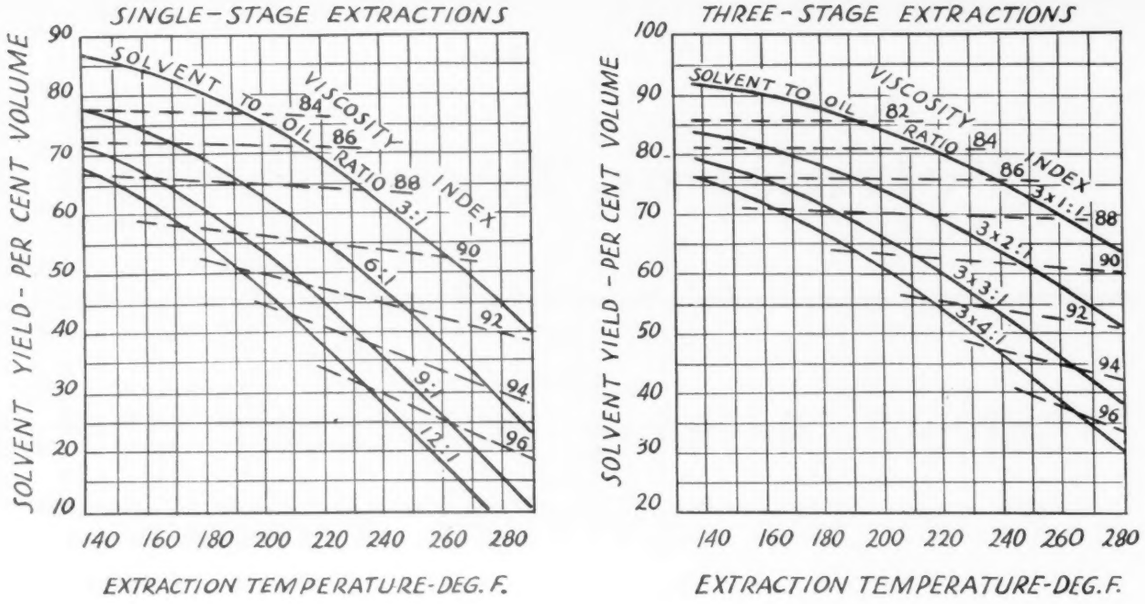

FIG. 1 Solvent "A."

naphthenic or saturated rings, and saturated chains in varying proportions. It is obvious that, in building large molecules with various proportions of these three types of carbon linkage, a wide variety of compounds can result. Hence, in speaking of an oil, or any part of it, as aromatic or naphthenic or paraffinic, we really mean that one or the other of the above types of carbon linkage predominates in that particular oil or part of it. Pure compounds of either type are not usually present in lubricating oils. Waxes come closer to being pure compounds (paraffinic chains), but dewaxing and dewaxing solvents are not considered in this article.

IT HAS been found that compounds of predominantly aromatic type are characterized by low viscosity index and poor oxidation resistance and, therefore, are undesirable from the standpoint of the refiner. Aromatic types also tend to increase the carbon residue, but in this respect they are not as significant as the asphaltic compounds. Asphalts are compounds of very high molecular weight, and exist in the oil in a highly-dispersed colloidal state. There are other compounds of an unstable nature which are easily polymerized to asphalts by heat or oxidation. Both might be considered analogous to the "preformed" and "potential" gum in gasolines. In addition, there are resinous compounds which may be light-colored and relatively stable to oxidation. All of these asphalts and resins have in common the property of being non-distillable in the ordinary sense. In other words, at all ordinary pressures they vaporize at temperatures far above the point at which they break down to form carbon. The usual refining solvents do not remove asphalts very effectively; and, if asphalts are present in large amounts, they are best removed by distillation or by the precipitation type of solvents such as propane, amyl alcohol, and others. A detailed discussion of de-asphalting processes, however, is somewhat beyond the scope of this article.

● A wide variation exists in the selectivity and the solvent power of different solvents used in extracting naphthenic from paraffinic fractions of lubricating oils, these authors show. An optimum balance must be found between solvent power and selectivity.

There are limits beyond which it is uneconomical to go, in using the greater latitude in the degree of refinement made possible by the use of solvents, they say.

No direct comparison is practicable between different commercial processes now available for the refiner. Differences in stocks treated, in degree of refining desired, and other factors make such comparisons unfair and inadvisable, they believe.

COMMERCIAL solvents for refining lubricating oils are mostly organic compounds or mixtures of compounds having a limited solubility in paraffinic or naphthenic hydrocarbons at ordinary temperatures but relatively good solvent power for aromatic-type hydrocarbons at the same temperatures. In other words, refining solvents have a preferential solubility for compounds of the aromatic type, and will selectively extract the predominantly aromatic types from a mixture of hydrocarbons such as a lubricating-oil fraction. However, other factors being equal, refining solvents have a somewhat greater solvent power for compounds of lower molecular weight, and it is possible for a solvent to extract compounds of low molecular weight of a relatively paraffinic nature, and fail to remove others which are relatively more aromatic but of higher molecular weight. For this reason, it may be inadvisable to solvent-refine a very wide fraction or a blend of widely different stocks. The stock may be over-refined on the lighter end and under-refined on the heavier end. This may not be evident from the viscosity index, but the oxidation resistance under certain conditions may be affected.

Refining solvents vary somewhat in solvent power, which is the ability to hold the aromatic constituents of the oil in solution. Solvent power is important because it influences the amount of solvent required to remove a given amount of impurity from a given stock. The solvent power of any solvent is increased by raising the temperature, but there are objections to carrying this expedient too far because of the effect on selectivity. The selectivity of a solvent is its ability to distinguish between the aromatic type of compounds and those of the naphthenic and paraffinic types. If a solvent cannot do this, it obviously has no value as a refining agent.

Considering the wide differences in chemical constitution of the various refining solvents now used, one would expect fairly-wide differences in their selectivity. Practically, this is not the case; because, while there may be marked differences between the solvents in their pure state, in practice we are not

dealing with pure solvents but with a solvent-oil system. The oil must be considered as reacting on the solvent as well as the reaction of the solvent on the oil. Analysis of a solvent-refining system shows that the raffinate is in equilibrium with nearly pure solvent, and the amount of solvent dissolved in the raffinate is quite small—perhaps 10 per cent. Therefore, it is not surprising that the quality of the raffinate is much more a function of the stock being treated than a function of the solvent used. On the other end of the system we have the extract, which is mostly solvent, in equilibrium with the charging stock. The solvent is carrying in solution an appreciable amount of aromatic compounds removed from the oil.

WHEN aromatic compounds are added to any refining solvent, they tend to increase the solubility of oil in the solvent until, when enough is added, the solvent and oil become completely miscible and the solvent can then no longer function as a refining agent. The amount and kind of aromatics present in the solvent are, of course, a function of the charging stock; and, as the influence of the aromatics on the solvent is very great, the type of oil charged to the system is really the dominant factor. As a result, it is found that practically all of the commercially-used solvents give about the same quality and yield of raffinate from a given charging stock if the best treating conditions are used for each of the solvents. Figs. 1, 2, and 3 are constructed from data obtained with three of the most widely used commercial solvents in one-stage and three-stage systems. A temperature and solvent ratio may be found for each which gives practically the same quality and yield of oil. A detailed technical discussion of these graphs will be published shortly in *Modern Methods of Refining Lubricating Oils.*‡

However, all solvents will not operate upon all charging stocks with equal economy, as some solvents are better suited to handle certain stocks than others. This does not apply to the treatment of residuum stocks where a large amount of asphaltic material is present. The Duo-Sol process, for instance, cannot logically be compared with single solvents on such stocks because, owing to the action of propane, the Duo-Sol process is essentially a combination de-asphalting and solvent-refining process and is, therefore, particularly suited to asphalt-bearing stocks. In the absence of asphalt, this advantage disappears.

From the foregoing it is obvious that the charging stock is the most important factor in solvent refining; and, while it may not determine which of the various commercial processes should be used, it will strongly influence the choice of treating conditions for efficient operation as well as the yield and quality of the finished product. Solvents vary in boiling point; and, as the solvent is generally recovered from the raffinate and extract phases by distillation, it is necessary to have a certain differential between the boiling point of the solvent and that of the oil. Therefore, the lower-boiling solvents can be used to treat lighter oils than would be practical with higher-boiling solvents. All solvents do not have the same selectivity or solvent power at the same temperature, and this again varies with the stock to be treated. Light oils of a predominantly aromatic or naphthenic nature require lower treating temperatures than heavy oils of a paraffinic nature. Light Coastal oils, for instance, require very low treating temperatures with some solvents, and, therefore, refrigeration would be necessary; while other solvents might be used at ordinary temperatures on the same stocks, and save the cost of refrigeration. Conversely, on viscous paraffinic oils, some solvents may be used at ordinary temperatures, while others require considerably elevated temperatures.

ELEVATED temperatures sometimes have a practical advantage, particularly with viscous oils having a high wax content. Higher temperature reduces the viscosity of the oil, and allows more intimate contact with the solvent. It also tends to reduce the danger of wax emulsions in the treater by holding the wax in solution. Hence, what might appear to be an expense for additional heat may in reality be a good investment from the standpoint of ease of operation or additional treating capacity.

While solvents permit the refiner far more latitude in the degree of refinement to which a stock may be treated than was generally possible with acid, there are limits beyond which it is not economical or even desirable to go. A higher viscosity index may usually be obtained with solvents than with acid from a given stock, but a point is reached where the viscosity index increases very slowly while the yield decreases rapidly, and that is obviously the economic refining limit for the particular stock in question. It is not always advisable to refine a stock to the economic viscosity-index limit, because a distinct loss in oxidation resistance may develop before that point is reached. Therefore, the maximum viscosity index

‡V. A. Kalichevsky.

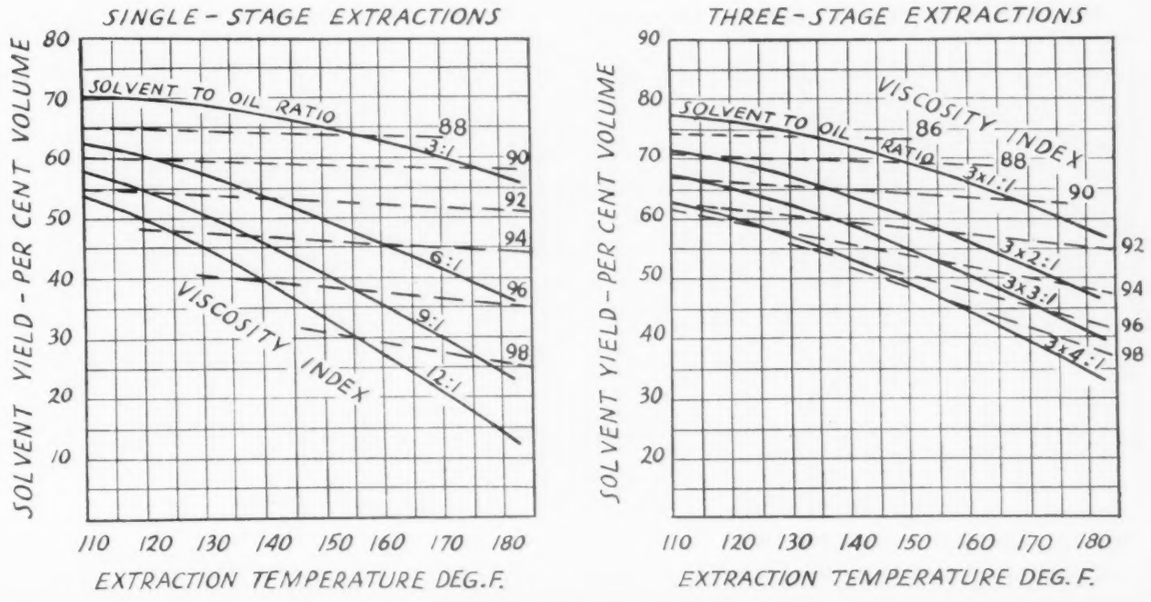

FIG. 2 Solvent "B."

which a stock is capable of producing economically may not be the best point to carry the refining in practice.

Solvent-refining operations appear quite simple, but operating a solvent-refining plant is not simple because of the several factors involved and the effect that each may have on the others. The solvent must be brought into intimate contact with the charging stock, and sufficient time allowed for the solvent to take up all of the undesirable part of the oil that it will under the conditions chosen. The time required will, of course, depend upon the amount of interface present or the dispersion of the oil in the solvent. When the solvent and oil have come to as nearly complete equilibrium as possible, they must then be separated as completely as possible. The time required for separation will depend upon the difference in gravity between the oil and solvent phase, the viscosity of the system, the degree of dispersion, and whether or not an emulsifier is present.

It is evident that a fine dispersion of oil in the solvent accelerates extraction but delays separation. Time, of course, determines the amount of material which must be held in the system for a given throughput and, therefore, affects the cost of solvent, equipment, etc. In practice it is, therefore, necessary to compromise on the degree of dispersion which will give the best extraction and separation in a reasonable time. It is possible to use mechanical aids to accelerate both extraction and separation. High-speed mixers have been used in conjunction with centrifuges, but both consume power and require additional cost for upkeep. There is still another way of decreasing time and compensating for the losses due to imperfect mixing, viz., more stages.

A single sieve will separate completely pebbles having a diameter of ½ in. from those having a diameter of ¼ in., but solvents do not work that way. Solvents will only remove a certain proportion of the impurity present, and, therefore, a succession of mixtures of solvent and oil must be made in order that extraction of the undesirable materials in the oil may approach completion. If the amount removed by any particular stage is not quite what it should have been, the failure may be corrected by adding one or more stages. When equilibrium is completely reached in each stage and separation of the phases is also complete, there is little to be gained in using more than seven or eight stages for severe refining, and even less if refinement is not to be carried very far. In practice, however, it may be advisable to employ less perfection in mixing and separation and introduce more stages. This is encountered in practical operation of the packed-tower treater.

It so happens that most of the compounds having properties suitable for refining agents also have specific gravities substantially higher than oil. Therefore, if a drop of oil is introduced at the bottom of a column of solvent, it will rise to the top and be continually in contact with fresh solvent throughout the trip from bottom to top. If horizontal equilibrium between the solvent and the oil were fast enough, the drop of oil would have to travel only a few diameters to be completely refined, and a treating tower only 1 in. or 2 in. in height would suffice. By extending the tower to many feet, it is possible to compensate for the lack of equilibrium at any one point and accomplish the same result. As towers have no moving parts and the liquid "holdup" is usually small compared with stage treaters, they are coming into wider use. At any one point they may be considered as inefficient; but that is overcome by the large number of effective stages which they contain because of their great height—and the over-all result is generally better than an eight-stage treater if they are carefully operated.

Another method of compensating for imperfect equilibrium between solvent and oil is the use of a temperature gradient. Mention has been made of the fact that increasing the temperature increases the solvent power of a solvent but decreases its selectivity. Mention has also been made of the fact that the presence of aromatic constituents in the solvent reduces the selectivity. In all counterflow systems the solvent gradually picks up aromatics as it travels from the raffinate end, where it is introduced, to the extract end where it departs;

TABLE 1

Charging Capacity of Solvent-Refining Plants Producing Lubricating Oils*

Process	January 1934			January 1935			January 1936			January 1937			January 1938 (Estimated)		
	Barrels Per Day	Total (Per Cent)	Present Capacity (Per Cent)	Barrels Per Day	Total (Per Cent)	Present Capacity (Per Cent)	Barrels Per Day	Total (Per Cent)	Present Capacity (Per Cent)	Barrels Per Day	Total (Per Cent)	Present Capacity (Per Cent)	Barrels Per Day	Total (Per Cent)	Present Capacity (Per Cent)
Plants in the United States															
Duo-Sol	.....	.....	.....	10,342	55.18	68.71	13,022	28.57	100.00	13,022	26.81	100.00	13,022	26.81	100.00
Furfural	1,600	47.06	11.35	1,600	8.54	11.35	11,100	24.36	78.72	14,100	29.02	100.00	14,100	29.02	100.00
Phenol	.....	.....	.....	.....	.....	.....	10,500	23.04	100.00	10,500	21.62	100.00	10,500	21.62	100.00
Chlorex	1,800	52.94	29.27	4,500	24.01	73.17	6,150	13.50	100.00	6,150	12.66	100.00	6,150	12.65	100.00
Sulfur-dioxide-benzol	.....	.....	.....	1,500	8.00	100.00	1,500	3.29	100.00	1,500	3.09	100.00	1,500	3.09	100.00
Nitrobenzene	.....	.....	.....	.....	.....	.....	2,500	5.49	100.00	2,500	5.15	100.00	2,500	5.15	100.00
Nitrobenzene-sulfuric acid	.....	.....	.....	800	4.27	100.00	800	1.75	100.00	800	1.65	100.00	800	1.65	100.00
Total	3,400	100.00	6.72	18,742	100.00	37.04	45,572	100.00	94.07	48,572	100.00	100.00	48,572	100.00	100.00
Plants in Europe and Canada															
Duo-sol	.....	.....	.....	.....	.....	.....	2,030	25.44	21.44	4,590	34.64	48.47	9,470	45.56	100.00
Furfural	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,710	12.91	39.17	4,366	21.01	100.00
Phenol	5,500	100.00	94.83	5,500	100.00	94.83	5,500	68.92	94.83	5,800	43.77	100.00	5,800	27.90	100.00
Sulfur-dioxide-benzol	.....	.....	.....	.....	.....	.....	450	5.64	39.13	1,150	8.68	100.00	1,150	5.53	100.00
Total	5,500	100.00	26.46	5,500	100.00	26.46	7,980	100.00	38.39	13,250	100.00	63.74	20,786	100.00	100.00
Plants in the World															
Duo-Sol	.....	.....	.....	10,342	42.66	45.98	15,052	28.11	66.92	17,612	28.49	78.30	22,492	32.43	100.00
Furfural	1,600	17.98	8.66	1,600	6.60	8.66	11,100	20.73	60.11	15,810	25.57	85.62	18,466	26.63	100.00
Phenol	5,500	61.80	33.74	5,500	22.69	33.74	16,000	29.88	98.16	16,300	26.37	100.00	16,300	23.50	100.00
Chlorex	1,800	20.22	29.27	4,500	18.56	73.17	6,150	11.48	100.00	6,150	9.95	100.00	6,150	8.87	100.00
Sulfur-dioxide-benzol	.....	.....	.....	1,500	6.19	56.60	1,950	3.64	73.58	2,650	4.29	100.00	2,650	3.82	100.00
Nitrobenbene	.....	.....	.....	.....	.....	.....	2,500	4.67	100.00	2,500	4.04	100.00	2,500	3.60	100.00
Nitrobenzene-sulfuric acid	.....	.....	.....	800	3.30	100.00	800	1.49	100.00	800	1.29	100.00	800	1.15	100.00
Total	8,900	100.00	12.83	24,242	100.00	34.95	53,552	100.00	77.21	61,822	100.00	89.13	69,358	100.00	100.00
Comparison of Plant Capacities in the United States and Abroad															
United States	3,400	38.20	6.72	18,742	77.31	37.04	45,572	85.10	94.07	48,572	78.57	100.00	48,572	70.03	100.00
Europe and Canada	5,500	61.80	26.46	5,500	22.69	26.46	7,980	14.90	38.39	13,250	21.43	63.74	20,786	29.97	100.00
Total	8,900	100.00	12.83	24,242	100.00	34.95	53,552	100.00	77.21	61,822	100.00	89.13	69,358	100.00	100.00

*Capacities shown in original table for Jan., 1930 and Jan., 1933 omitted.—**Editor.**

DON'T POISON THEM

Gumbugs don't have a chance against the chemical sergeant and you can't drown him Water won't wash him out of gasoline — or the chemical cop either

But poison will put them out

If you use too much sulfur in doctor treating, if you leave caustic in the gasoline after sweetening, the police department turns up its toes and the gumbugs increase and multiply

The chemical sergeant is U O P Inhibitor No 4 The cop is No 1

The sergeant keeps the gum all out of your cracked gasoline and the anti-knock value all in — if you give him the chance

Treat your gasoline by the U O P sweetening process before inhibiting — then the chemical sergeant will have the best possible chance to do his duty as the birth controller of gumbugs

The chemical sergeant saves you the cost of acid treating and does a better job

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

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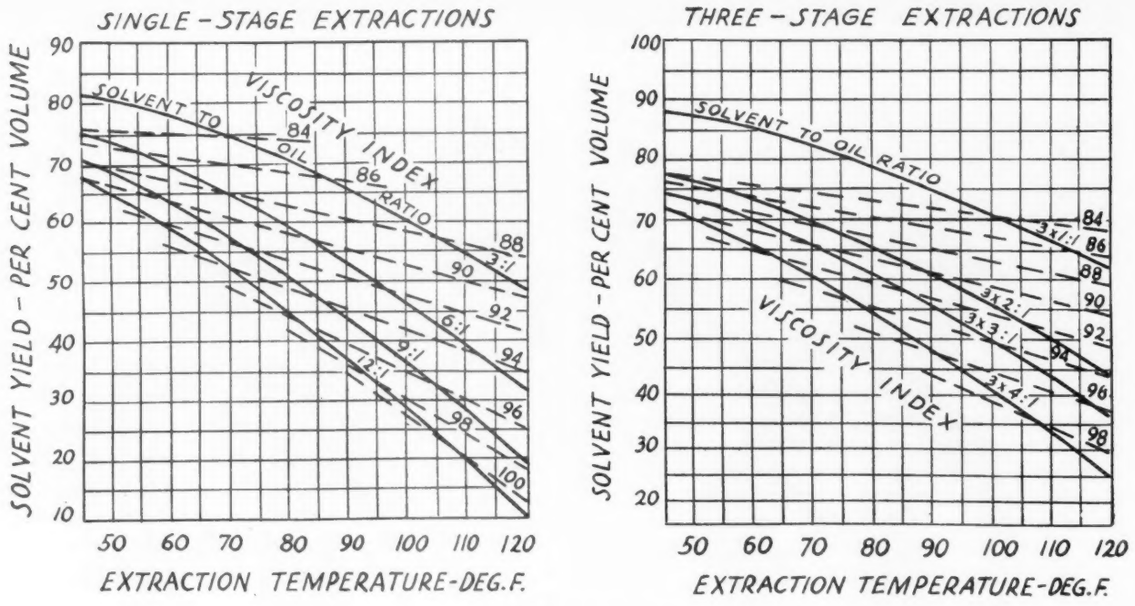


FIG. 3 Solvent "C."

and, hence, the solvent is continually losing selectivity. The yield is determined entirely by the state of affairs on the extract end of the system. In other words, the yield is what the solvent does not elect to carry away with it as extract. Yield is, therefore, a function of the charging stock, the solvent, the solvent-to-oil ratio, and the temperature at the extract end of the system. On the other hand, the quality of the raffinate will be a function of the stock, the solvent, the solvent-to-oil ratio, and the temperature at the raffinate end. Practically speaking, the identity of the solvent drops out, and may be disregarded. The important consideration is the progressive change in solvent power and selectivity of the solvent throughout the system. A solvent ratio capable of producing a raffinate of desired quality may display too much solvent power at the extract end of the system, and result in a low yield. If, however, the temperature is increased at the raffinate end, less solvent may be used. By gradually decreasing the temperature towards the extract end, compensation for the increasing solvent power of the solvent is obtained and the quality-yield ratio may be improved, but care must be used in adjusting the temperature gradient to the optimum inherent to the system. Otherwise, the quality or yield of the raffinate may drop.

Compensation for excessive solvent power and loss of selectivity of the solvent may be accomplished in other ways. In the case of mixed solvents such as benzol-sulfur-dioxide, it might be done by changing the solvent ratio as, for instance, increasing the sulfur dioxide toward the extract end. With single solvents it may be done by adding water or another solvent toward the extract end, but the principle remains the same.

While on the subjects of temperature gradients, selectivity, and solvent power—mention might be made of a difficulty which is sometimes encountered in practice. One or more of the stages may form a complete solution; i.e., the two phases disappear. This may be due to too high temperature, too high concentration of aromatics in the solvent at that point, or both. It can be corrected by dropping the temperature, using more solvent or modifying the solvent with water, etc. A higher solvent ratio is usually advisable.

Occasionally, a failure to get good separation is due to the formation of emulsions. Any system dealing with two immiscible liquids is subject to emulsification, particularly if a fine-divided insoluble material is present. In the case of solvent refining, such a material might be wax or asphalt. If improper separation of the solvent and oil phases is encountered, it should first be determined whether a solution or an emulsion is the cause. It can then be corrected accordingly.

From what has been said, it is clearly impossible to make a fair direct comparison of the various commercial processes now in use because of the widely-different nature of the charging stocks they are handling. No one process is best for every stock; and, therefore, no single stock can be used for such a comparison except by the refiner who is interested in that particular stock to the exclusion of all others. Neither is it fair to discuss the mechanical equipment in vogue at the moment with any particular process. Solvent processes are comparatively young, and practically all have been changed more or less since their introduction. It seems unquestionable that other changes will be made, and that some may even be under way. We might dwell on details of the chlorex or furfural processes, for instance, only to find that tomorrow they are no

TABLE 2
Solvent Data

	Propane	Sulfur Dioxide	Benzol	Cresylic Acid	Phenol	Chlorex	Furfural	Nitro-benzene
Molecular weight	44.08	64.12	78.05	108.06	94.05	142.98	96.03	123.05
Melting point, deg. F.	—310	—99	41.9	.....	105.6	—12	—34	42.5
Boiling point, deg. F. (760 mm. mercury)	43.8	14	175.3	365-400	361	352.4	323	411.5
Vapor pressure at: 100 deg. F. (mm. mercury)	9,460	4,370	176	.....	.....	2	7	0.9
Vapor pressure at: 286 deg. F.	.....	45,524	3,520	160 approximate	264	.....	.....	100
Critical temperature, deg. F.	212.2	311	552	800 approximate	786	.....	746	.....
Critical pressure, lb. per sq. in., absolute	643.3	1,160	700	740 approximate	889	.....	798	.....
Latent heat of vaporization, B.t.u. per lb.	183.0	167	169.7	180	206	115.4	193.5	142
Specific heat, B.t.u. per lb. per deg. F.	0.658	0.32	0.41	0.53	0.56	0.369	0.416	0.34
Specific gravity, 68/68 deg. F.	0.5116	1.45	0.8050	1.045	1.072	1.222	1.1622	1.207
Flash point, deg. F.	.....	.....	10	180	174	168	138	208
Solubility in water: at 77 deg. F.	.....	.....	0.07 per cent	2.5 per cent	9 per cent	1.01 at 20 deg. C.	8.5 per cent	0.2 per cent
Solubility in water: at 100 deg. F.	.....	599 cc.	.....	3.1 per cent	.....	1.71 at 90 deg. C.	9 per cent	0.25 per cent

longer simply chlorex and furfural but have had something added to them, as happened with the Edeleanu process.

It, therefore, appears possible only to list the actual accomplishments of the more important processes from the most recent data we have been able to collect, and pass on to a brief consideration of solvent-refined oils and some of their properties compared with oils in use before the advent of solvent refining.

With this thought in mind, we have summarized in Table 1 the charging capacities of lubricating-oil solvent-refining plants throughout the world during the last few years. Plants using straight sulfur dioxide have a total capacity of 92,260 bbl. per day; but they are not included in the summary, because they are used mostly for refining light petroleum products such as kerosine.

Considering viscosity index, carbon residue, and oxidation stability of petroleum oils as the measures of oil improvement in solvent-refining operations, the advantages of solvents over the older acid-refining methods may be easily observed. In acid-refining Mid Continent stocks for manufacturing oils of approximately SAE-40 grade, it was barely possible to obtain products which had a carbon residue below approximately 0.8, except with overhead stocks, while the viscosity index could not be improved more than to 85-90. The oxidation stability of such oil was likewise below that of the present oils. Solvent-refining methods applied to residual stocks permit manufacture of similar types of oils having a carbon residue of about 0.2 and a viscosity index of 100, while their oxidation stability is greatly improved. Table 3 gives a comparison of acid-refined and solvent-refined oils marketed during 1932 and 1937, respectively.

While the above discussion shows the effect of solvent refining on Mid Continent stocks, similar advances were made in manufacturing oils from Pennsylvania crudes. These oils contain only small quantities of "preformed" asphalt, and their carbon residue can be effectively reduced by applying solvents followed by clay percolation. The effect of such preliminary solvent refining on the properties of finished products may be likewise visualized from the comparisons in Table 4.

The above typical data show the progress made in manufacturing lubricating oils and the extent of the improvement of commercial products which are now being marketed.

No convincing data have been published so far to show that solvent-refined oils differ from acid-refined oils with respect to oiliness or wear when strictly comparable test conditions were employed. The following data are typical when oils of equal viscosity, and from the same crude source, are used. Oil No. 1 was acid-refined, while oil No. 2 was solvent-refined. Both were of Mid Continent origin, and were handled exactly alike except for the difference in the refining agent used. Wear tests were made with a Timken machine, and friction load curves with a Kingsbury machine.

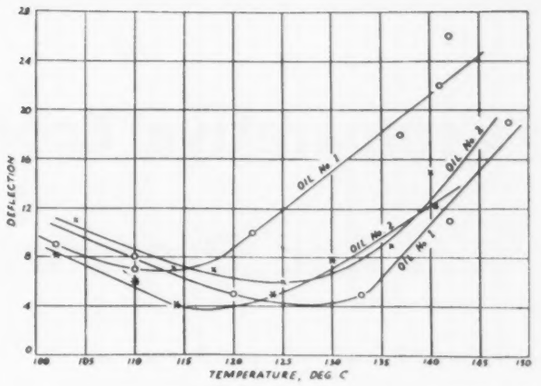
Timken Wear Tests

	Width of Scar in Millimeters	
	Oil No. 1	Oil No. 2
Run No. 1	1.28	1.33
Run No. 2	1.02	1.03
Run No. 3	1.11	1.09
Average	1.14	1.15

Friction-load curves in Fig. 4 also show the practical equivalence of these two oils.

Today, solvent-refined oils are recognized as products of premium quality, and are preferred by buyers to conventionally-refined oils of equal cost. In the early stages of their development, this was not always the case. For example, the introduction of the newer higher-strength bearing alloys brought with them cases of bearing corrosion which were at that time attributed to solvent-refined oils. These failures were afterwards traced to their source, being most frequently the result of engine operation at excessive crankcase temperatures which were set up at sustained road speeds above 70 m.p.h.

As a matter of fact, careful research showed that typical



Tests on Kingsbury Machine. FIG. 4

TABLE 3

Comparison of Mid Continent Motor Oils

	1932 (Acid-refined)		1937 (Solvent-refined)	
	SAE-40	SAE-60	SAE-40	SAE-60
Gravity, deg. API	25.7	23.7	28.8	28.0
Pour point, deg. F.	20	25	0	5
Flash point, deg. F.	430	480	460	515
Fire point, deg. F.	490	535	520	585
Viscosity (Saybolt Universal) at 100 deg. F., sec.	770	1,765	660	1,437
Viscosity (Saybolt Universal) at 210 deg. F., sec.	73	110	73	110
Viscosity index	83	80	100	98
Carbon residue, per cent	0.9	1.4	0.2	0.3
Color (Lovibond)	170	240	60	80
Sligh oxidation No.	17	4	0	0

TABLE 4

Comparison of Pennsylvania Motor Oils

	1932 (Percolated and Dewaxed)		1937 (Solvent-refined. Percolated, and Dewaxed)	
	SAE-20	SAE-60	SAE-20	SAE-60
Gravity, deg. API	28.4	26.2	31.1	28.5
Pour point, deg. F.	5	20	0	0
Flash point, deg. F.	430	510	430	540
Fire point, deg. F.	485	575	480	610
Viscosity (Saybolt Universal) at 100 deg. F., sec.	373	1,736	294	1,543
Viscosity (Saybolt Universal) at 210 deg. F., sec.	57	123	55	122
Viscosity index	100	98	117	105
Carbon residue, per cent	0.6	1.5	0.3	0.4
Color (Lovibond)	120	300	70	30
Sligh oxidation No.	4.0	1.0	0	0

solvent-refined oils were less prone to corrode bearings than the widely-accepted Pennsylvania oils which were conventionally refined. They were, however, more prone to cause corrosion than the Coastal oils, which tended to form sludge rather than acids during oxidation. Much credit must be given the petroleum industry for studying this problem with an open mind.

A similar situation existed in the lubrication of engines of high specific output; but several years of practical experience, both in our own country and abroad, has shown conclusively that solvent-refined oils are far superior to any oils previously available. The aviation industry, particularly, has demonstrated the better quality of solvent-refined oils as to leave no doubt that a marked improvement in operation has resulted from their use.

Field results must always be accepted as the final word in the evaluation of any change, whether it be oil refining or anything else. In the case of solvent refining, the field results over a period of four years or more, on a great variety of oils, have been remarkably consistent in substantiating laboratory predictions that solvent-refined oils were generally superior to acid-refined oils. We may now conclude that the superiority of solvent-refined oils is a proven fact.

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Comparative Economics Of Refrigerated And Pressure Light Oil Storage

By W. B. FRANKLIN*

(Slightly Condensed from paper presented under title, "Economics Of Investments For Storage of Light Ends", before Seventh Mid-Year meeting, American Petroleum Institute, Colorado Springs, June 2, 1937).

THE quantity of butane evolved from refrigerated storage is proportional to amount of butane stored and independent of amount of admixed base stock.

For large quantities of light oils, refrigerated storage is more profitable than pressure methods when no extra labor is involved in the former.

Seasonal storage of butane is profitable when a price differential of $1.50 per barrel can be realized.

These conclusions arrived at by the author here are of more than ordinary interest to the refiner, in these days of narrow margins, in attempting to decide between two courses of action. Humble Oil & Refining Co. is preparing to store and process large quantities of butane at Baytown, as charging stock for the new thermal polymerization unit which is expected to start operations early in June. For this reason the company doubtless has been intensively investigating the problem of butane storage.

IN ORDER to present an economic comparison of the various types of storage vessels, it is necessary to estimate the expense required for the maintenance and operation of the equipment which, in turn, requires a knowledge of the quantities of vapor evolved from light-end storage. The use of pressure tankage is, quite obviously, for the purpose of minimizing or completely eliminating vapor evolution. In properly-designed tankage, dead-storage vaporization (vaporization due to heat received from the environment) may be completely eliminated, and vapor displacement caused by tank pumpings is either eliminated or considerably reduced—depending on the rate of pumping and the nature of the stored material. The operating expense of pressure storage is, therefore, small.

The operation of insulated tankage is dependent upon the partial vaporization of the liquid contents for necessary refrigeration. Some data were available on vapor evolution from insulated tankage held in dead storage. The tanks investigated (80,000-bbl., atmospheric-pressure, 117 ft. in diameter by 42 ft. high) were insulated with a 2-in. thickness of mineral wool and contained refinery casinghead of 25 lb. to 40 lb. Reid vapor pressure. The following equation represents the best correlation of the available data for these vessels.

$$\text{Barrels per day vaporized} = C\left[0.000048\,(T_a - T_b)\,X + 0.0047\,(1-X)\left(\frac{T_{max} - T_{min}}{T_{min}}\right)\right]$$

$$\text{or per cent vaporized per day} = 0.0048\,(T_a - T_b) + 0.47\,\frac{(1-X)}{X}\left(\frac{T_{max} - T_{min}}{T_{min}}\right)$$

where:
- C = capacity of tank, bbl.
- T_a = average atmospheric temperature, deg. F.
- T_b = atmospheric boiling point of liquid stored, deg. F.
- X = fraction of the tank filled with liquid.
- T_{max} = maximum vapor space temperature, deg. F.
- T_{min} = minimum vapor space temperature, deg. F.

The first term of this equation represents the heat transferred through the walls and insulation to the liquid contents, assuming the skin temperature of the insulation equal to the average atmospheric temperature. This assumption is justifiable on the basis that the resistance of insulation, metal wall, and liquid film are the limiting resistances to heat transfer. The second term represents the vapor evolution due to expansion in the vapor space calculated from the diurnal temperature change. It is believed that this equation is sufficiently accurate for approximating dead-storage vapor evolution from large refrigerated tanks (insulated with 2 in. of mineral wool) for casinghead containing 30 to 100 per cent butanes. However, a correction is necessary in the first term for any tankage whose ratio of effective surface to volume is greatly different from that for which the relation was derived.

In addition to the above, vapor evolution from the initial refrigeration of the liquid entering storage must be considered. This is computable directly by heat balance from a knowledge of the quantity and temperature of the entering liquid, the boiling point of the tank contents, and enthalpy data of the hydrocarbons.

It has been found that vapor evolution from refrigerated storage is a function of the quantity of butane stored, and is practically independent of the concentration of butane in the stored liquids for propane-free casinghead varying from 30 to 100 per cent butanes. A typical situation has been analyzed, and is shown in Table 1. It was assumed that 40,000 bbl. of butane must be stored for six months in the form of casinghead of Reid vapor pressure varying from 30 to 60 lb. per sq. in. An average atmospheric temperature of 75 deg. F., and an average temperature of the liquid delivered to storage of 80 deg. F., were selected. For the sake of simplicity, 100 per cent inventory was considered, thereby eliminating vapor evolution due to breathing; and it was assumed that all vapors evolved were compressed, completely condensed, and returned to the tank.

It is evident from this illustration that the total vapor evolution and, hence, the processing expense are substantially independent of the quantity of butane-free base stock stored. It is also apparent that, when it is required that only butane be stored, no appreciable reduction in operating expense can be effected by the use of base stock for "holding" the butane, except in unusual circumstances where small quantities of butanes are stored in large refrigerated tanks.

Considerable difficulty has been experienced in obtaining reliable cost data during the current year because of the rapid advances in material and labor prices. It was, therefore,

*Humble Oil and Refining Co.

decided that available cost data prior to that time be used as a basis for these studies. In Fig. 1 the approximate initial investments for various types of tankage are shown as a function of tank capacity. These data, for the most part, represent actual investments on a number of installed tanks; however, in some cases the total investment was taken as the cost of steel and erection plus 50 per cent.

Table 2 presents comparisons of the initial investments and total expenses for the storage of 40,000 bbl. of butanes in relatively inactive pressure and refrigerated tankage. Cases were set up under refrigerated storage to illustrate the relative merits of this type under these conditions: case I, one man-day of operating labor required throughout the year; case II, plant idle for one-half the year; and case III, no additional labor required to operate the compressor plant. The time necessary to pay out the additional first cost for pressure storage is seen to vary from six to an infinite number of years, depending upon the operating labor required. From this it can be concluded that refrigerated storage is the more profitable investment where little or no additional labor is necessary. It should be pointed out that on the above illustration, although operating expenses were calculated for relatively inactive tankage, they will not be greatly increased in active storage, since utility costs are small compared with the total.

A further comparison of pressure and refrigerated tankage is made in Table 3 for the storage of 108,000 bbl. of casinghead of 30 lb. Reid vapor pressure containing 40,000 bbl. of butanes. The initial investment required for storage of this quantity of casinghead is $115,000, as compared with $120,000 for the storage of 40,000 bbl. of butanes (Table 2). It is apparent that the initial investment for storage of butane in pressure tankage is practically independent of the base stock added. This, however, does not apply to refrigerated storage; the total investment definitely increases as the percentage of butane is decreased. Since the operating expenses are substantially the same as those in Table 2, it should be expected that the pay-out time of the additional investment for pressure over refrigerated storage will be less with the lower vapor-pressure casinghead.

Table 4 presents a comparison of the costs of storage of butane and base stock in segregated tankage.

Based on the above comparisons, refrigerated storage ap-

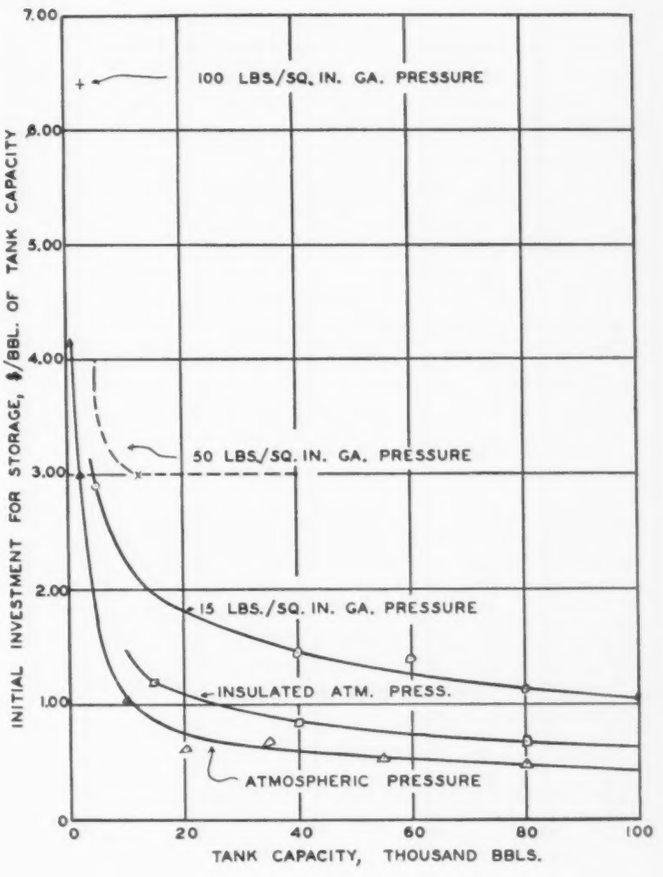

Fig. 1. Relationship between initial investment in storage capacity at different pressures, and the size of storage tanks

TABLE 1

Vapor Evolution from Refrigerated Storage

(Basis: 40,000 Bbl. of Butane Plus Admixed Base Stock)

Reid vapor pressure, lb.	30	40	50	60
Butane in liquid stored, per cent	37	58	79	100
Total storage, bbl.	108,000	69,000	51,000	40,000
Butane-free base stock stored, bbl.	68,000	29,000	11,000	0
Average atmospheric temperature, deg. F.	75	75	75	75
Average temperature of liquid entering tank, deg. F.	80	80	80	80
Temperature of tank contents, deg. F.	57	43	32	23
Dead-storage vaporization (as liquid), bbl. per year	16,800	19,000	18,000	18,000
Vapors expelled by pumping to tank (as liquid), bbl. per year	470	300	220	170
Initial flash vaporization (as liquid), bbl. per year	8,900	9,000	8,700	8,100
Flashing condensed vapors returned to tank (as liquid), bbl. per year	2,340	4,300	5,500	6,600
Total vapor evolution (as liquid), bbl. per year	28,510	32,600	32,420	32,870

TABLE 2

Comparison of Expense of Storage of Butanes in Pressure and Refrigerated Tankage

(Basis: 40,000 Bbl. of Butanes)

	Pressure	Refrigerated Storage		
	Storage	Case I	Case II	Case III
Investment for tankage, dollars	$120,000	$33,000	$33,000	$33,000
Investment for compressor plant, lines, etc., dollars	.....	22,000	22,000	22,000
Total investment, dollars	$120,000	$55,000	$55,000	$55,000
Operating labor, dollars per year	.....	8,760	4,380	.....
Repair labor, dollars per year	300	633	633	633
Repairs and material, dollars per year	300	633	633	633
Utilities, dollars per year	.....	800	400	800
Direct overhead, dollars per year	129	1,836	1,061	272
Taxes, dollars per year	1,200	550	550	550
Direct expense, dollars per year	$1,929	$13,212	$7,657	$2,888
Depreciation, dollars per year	3,600	2,310	2,310	2,310
Total expense, dollars per year	$5,529	$15,522	$9,967	$5,198
Difference in total expenses, dollars per year	$.....	$9,993	$4,438	$ —331
Pay-out on additional investment for pressure storage, years:				
Interest rate, 0 per cent	.....	6.5	14.7	Infinite
Interest rate, 3 per cent	.....	7.3	20.0	Infinite

Case I—Plant operating throughout the year, requiring one man per day of additional labor.
Case II—Plant idle for six months.
Case III—No additional labor required.

TABLE 3

Comparison of Expense of Storage of Casinghead, of a Reid Vapor Pressure of 30 Lb., in Pressure and Refrigerated Tankage
(Basis: 40,000 Bbl. of Butanes Plus 68,000 Bbl. of Base Stock)

	Pressure Storage	Refrigerated Storage		
		Case I	Case II	Case III
Investment for tankage, dollars	$115,000	$62,000	$62,000	$62,000
Investment for compressor plant, lines, etc., dollars	.....	22,000	22,000	22,000
Total investment, dollars	$115,000	$84,000	$84,000	$84,000
Operating labor, dollars per year	.....	8,760	4,380	.....
Repair labor, dollars per year	288	705	705	705
Repairs and material, dollars per year	288	705	705	705
Utilities, dollars per year	.....	800	400	800
Direct overhead, dollars per year	124	1,867	1,092	303
Taxes, dollars per year	1,150	840	840	840
Direct expense, dollars per year	$1,850	$13,677	$8,122	$3,353
Depreciation, dollars per year	3,450	3,180	3,180	3,180
Total expense, dollars per year	$5,300	$16,857	$11,302	$6,533
Difference in total expenses, dollars per year	$.....	$11,557	$6,002	$1,233
Pay-out on additional investment for pressure storage, years:				
Interest rate, 0 per cent	.....	2.7	5.2	25.1
Interest rate, 3 per cent	.....	2.8	5.7	48.0

Case I—Plant operating throughout the year, requiring one man per day of additional labor.
Case II—Plant idle for six months.
Case III—No additional labor required.

pears to be the more profitable investment for relatively inactive tankage where little or no additional operating labor is required. Under circumstances where it is required that both butane and base stock be stored, pressure storage becomes the more desirable choice as the vapor pressure of the stored liquid decreases. Tables 2, 3, and 4 also indicate that, from the standpoint of storage expense alone, no advantage can be gained in either the initial cost or operating expenses by segregation of butanes and base stock.

Seasonal Light-End Storage

Frequently in refining operations the quantity of butane available for blending in gasoline is insufficient to meet vapor-pressure specifications during the winter months. Three alternatives are generally presented as possible remedies for this situation: 1, the purchase of butanes at market prices to meet seasonal demands; 2, expansion of vapor-recovery facilities for increased butane recovery; and, 3, the storage of surplus butanes available at other seasons for use when they can be included in gasoline. It is believed that the latter alternative has wide possibilities, as shown by the illustrations below.

Continuing the analysis of situations used previously, Table 5 shows the savings (before fixed charges) that could be effected by the seasonal storage of 40,000 bbl. of butane in both pressure and refrigerated tankage. The value of butanes blended in gasoline was taken at $2 per barrel, whereas the value of butanes during seasons when it could not be included in gasoline was taken at fuel prices, $0.50 per barrel. On this basis the time of pay-out for the seasonal storage of butane is about two years for pressure tankage and one year for refrigerated tankage. This indicates that investments for seasonal storage may prove attractive for butane cost differentials as low as $0.50 per barrel. It is thus quite possible that in some instances it may be profitable to store surplus butanes for future marketing or processing, even though full gasoline prices may not be realizable.

Seasonable Butane Storage Vs. the Cost of Additional Vapor Recovery

In order to make the proper choice of investments to meet seasonal butane requirements, it is usually necessary to consider the possibility of increasing absorption-plant facilities, in the case of an existing vapor-recovery system; or, in the case of a proposed plant, to consider construction of a larger plant to meet the seasonal demand. An economic comparison of investments for seasonal butane storage and additional butane recovery has been attempted.

The cost of equipment to provide additional butane recovery in an existing plant is exceedingly difficult to obtain without detailed knowledge of the factors limiting the capacity of that plant. It was considered advisable to take as the basis of this study the total investments for new absorption and stabilization plants operating at various butane recoveries. It was found that the initial cost of absorption and stabilization facilities in a normal refinery is approximately equal to a base cost of $100,000 plus a unit cost of $14 per barrel per day of lean-oil circulation. Table 6 shows the total initial costs of plants operating on 13,000,000 cu. ft. per day of wet gas containing 10 per cent butanes and recovering from 40 to 95 per cent of the butanes. The increment initial cost in dollars per barrel of additional butane recovered per day, obtained from the slope of the tangents to the total cost function, are also listed in Table 6.

Comparison of investments for additional recovery with

TABLE 4

Comparison of Expense of Segregated Storage of 40,000 Bbl. of Butane and 68,000 Bbl. of Base Stock

	Pressure Storage			Refrigerated Storage*		
	Base Stock	Butane in Pressure Tank	Total	Base Stock	Butane in Refrigerated Tank	Total
Investment for tankage, dollars	$36,000	$120,000	$156,000	$36,000	$33,000	$69,000
Investment for compressor plant, lines, etc., dollars	.....	.....	.....	.....	22,000	22,000
Total investment, dollars	$36,000	$120,000	$156,000	$36,000	$55,000	$91,000
Operating labor, dollars per year	.....	.....	.....	.....	8,760	8,760
Repair labor, dollars per year	90	300	390	90	633	723
Repairs and material, dollars per year	90	300	390	90	633	723
Utilities, dollars per year	.....	.....	.....	.....	800	800
Direct overhead, dollars per year	40	129	169	40	1,836	1,876
Taxes, dollars per year	360	1,200	1,560	360	550	910
Direct expense, dollars per year	$580	$1,929	$2,509	$580	$13,212	$13,792
Depreciation, dollars per year	1,080	3,600	4,680	1,080	2,310	3,390
Total expense, dollars per year	$1,660	$5,529	$7,189	$1,660	$15,522	$17,182
Difference in total expenses, dollars per year	.....	.....	.....	.....	.....	$9,993
Pay-out on additional investment for pressure storage, years:						
Interest rate, 0 per cent	.....	.....	.....	.....	.....	6.5
Interest rate, 3 per cent	.....	.....	.....	.....	.....	7.3

*Requiring one man per day of additional labor.

investments for storage should be made on the basis of the fractional part of the year during which the additional butanes can be utilized. Table 7 presents such a comparison for utilization of butanes during 180 days per year for plants operating at from 50 to 90 per cent recovery. A number of similar comparisons have been made, and the results plotted in Fig. 2. The relationships between the pay-out of investments for storage over increased vapor-recovery facilities (to obtain one additional barrel per day of butane) are shown as a function of the per cent butane recovery of the plant and the days per year during which the additional increment of butane can be utilized. Fig. 2 may be used in a general way to predict situations where one or the other investment may be the more profitable. For example, the field below a given pay-out curve represents situations where storage would prove the more profitable investment, whereas the field above is the region favorable to increased butane recovery. It should be pointed out that Fig. 2 is applicable to small increments of butane recovery rather than to large increases (for example, from 60 to 80 per cent), and should be used accordingly.

A further comparison of investments for increasing butane recovery with those for seasonal storage of butane is made in Table 8, where a typical situation was set up. It was assumed that the existing plant was recovering 60 per cent of the available butanes (1,000 bbl. per day) during the winter, and that 222 bbl. per day of additional butane could be utilized for gasoline blending during 180 days per year. Table 8 lists investments and total expenses for the additions to the gas plant necessary to meet this demand, and for the installation of pressure tankage for storage of surplus butanes

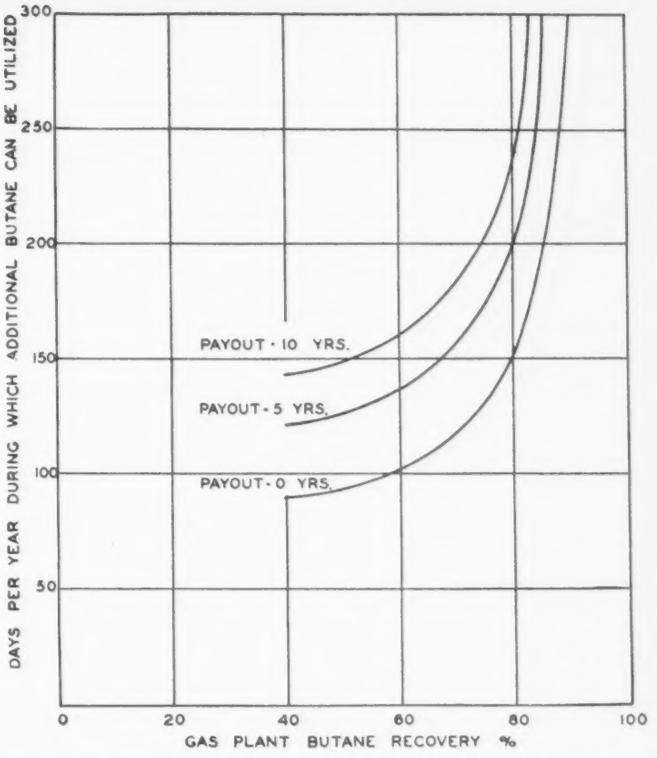

Fig. 2. The time required to pay out additional pressure storage investments, over increasing butane recovery capacity by 1 barrel per day

TABLE 5
Investments for Seasonal Storage of Butanes
(Basis: 40,000 Bbl.)

	Pressure Storage	Refrigerated Storage Case I	Case II	Case III
Investment, dollars	$120,000	$55,000	$55,000	$55,000
†Direct expense before depreciation, dollars per year	1,929	13,212	7,657	2,888
Debit butane at $0.50 per bbl. as fuel, dollars per year	20,000	20,000	20,000	20,000
Credit butane at $2.00 per bbl. as gasoline, dollars per year	80,000	80,000	80,000	80,000
Annual savings before depreciation, dollars per year	$58,071	$46,788	$52,343	$57,112
Annual return on investment before depreciation, per cent	48.4	85	95	104
Time of pay-out, years	2.07	1.17	1.05	0.96

†Itemized in Table 2.

TABLE 6
Investments for Gas-Plant Facilities for Various Butane Recoveries

Example:
Basis: 13,000,000 cu. ft. per day of wet gas containing 10 per cent butanes (1,000 bbl. per day). Operating pressure, 70 lb. per sq. in., gage. No provision made for stand-by equipment.

Butane Recovery (Per Cent)	Butane Recovery (Barrels Per Day)	Oil Circulation (Barrels Per Day)	Total Cost (Dollars)	Unit Cost (Dollars Per Barrel of Butane)	Increment Cost (Dollars Per Barrel of Additional Butane Per Day)
40	400	7,000	$198,000	$496	$270
50	500	9,000	225,000	450	280
60	600	11,000	254,000	424	300
70	700	13,200	285,000	408	350
80	800	16,000	325,000	406	440
85	850	18,000	352,000	414	630
90	900	21,000	394,000	428	900
95	950	26,000	465,000	490	2,400

TABLE 7
Comparison of Investments for Additional Butane Recovery and Seasonal Butane Storage (Pressure Tankage)
(Basis: 1 Bbl. Per Day of Additional Butane Recovery)

Butane recovery of plant, per cent	50	60	70	80	85	90		
No. of days per year recovered butane can be utilized	180	180	180	180	180	180	quantity of butane stored, bbl. per year	180
Increment investment to recover 1 bbl. per day of additional butane, dollars per bbl. per day	$280.00	$300.00	$350.00	$440.00	$630.00	$900.00	investment for pressure storage	$540.00
Operating labor, dollars per year	.....	.....	.....	.....	.....	.....	.....	.....
Maintenance and repair, dollars per year	14.00	15.00	17.50	22.00	31.50	45.00	.....	2.70
*Utilities, dollars per year	.....	.....	.....	.....	.....	.....	.....	.....
Direct overhead, dollars per year	3.00	3.20	3.80	4.70	6.80	9.70	.....	.60
Taxes, dollars per year	2.80	3.00	3.50	4.40	6.30	9.00	.....	5.40
Direct expense, dollars per year	$19.80	$21.20	$24.80	$31.10	$44.60	$63.70	.....	$8.70
Depreciation, dollars per year	16.80	18.00	21.00	26.40	37.80	54.00	.....	16.20
Total expense, dollars per year	$36.60	$39.20	$45.80	$57.50	$82.40	$117.70	.....	$24.90
Difference in total expenses, dollars per year	$11.70	$14.30	$20.90	$32.60	$57.50	$92.80		
Pay-out on additional investment for pressure storage, years:								
Interest rate, per cent	22.2	16.8	9.1	3.1	—1.6	—3.9		

*Utilities assumed to be the same whether the increment of butane is recovered at one season or the other.

TABLE 8

Comparison of Investments for Increasing Butane Recovery with Investments for Seasonal Storage of Butane

Basis: 40,000 bbl. of additional butane required during 180 days. Existing plant operating at 60 per cent recovery in winter.

	Pressure Tankage	Addition to Gas Plant
Butane recovery after addition to gas plant, per cent	.....	82.2
Investment, dollars	$120,000	$85,000
Operating labor, dollars per year	.....	.....
Maintenance and repair, dollars per year	600	4,250
Utilities, dollars per year	1,200	1,600
Direct overhead, dollars per year	129	910
Taxes, dollars per year	1,200	850
Direct expense, dollars per year	$3,129	$7,610
Depreciation, dollars per year	3,600	5,100
Total expense, dollars per year	$6,729	$12,710
Debit butane as fuel at $0.50 per bbl.	20,000	20,000
Credit butane as gasoline at $2.00 per bbl.	80,000	80,000
Annual return on investment, dollars per year	$53,271	$47,290
Annual return on investment, per cent	44	56

available during the summer. In the two cases cited, both investments appear attractive; however, investments for seasonal storage become the more profitable in the region of higher butane recovery and for shorter periods during which butanes may be utilized.

CONCLUSIONS

1. The quantity of vapor evolved from refrigerated storage tanks is approximately proportional to the amount of butane stored, and is independent of the quantity of admixed base stock for casinghead of 30 lb. to 60 lb. Reid vapor pressure.

2. When it is required that storage for a given quantity of butane be provided, no appreciable saving either in operating expense or initial investment can be effected by use of base stock for "holding" the butane. However, when it is required that both base stock and butane be stored, these materials, upon consideration of storage expense alone, should be stored together.

3. For relatively large quantities of light ends, refrigerated storage becomes a more profitable investment than pressure storage when no additional labor is required for operation of the compressor plant. On the other hand, the additional investment required for pressure storage (over refrigerated storage) may be paid out in as little as 2½ years when labor is required. In highly-active service, pressure storage is, in general, the more economical.

4. Seasonal storage of butane appears profitable for any type of tankage when a price differential of $1.50 per barrel ($2.00 per barrel as gasoline, less $0.50 per barrel as fuel) can be realized. In the case of refrigerated tankage requiring no additional labor for operation of the gas plant, seasonal storage may prove profitable for price differentials as low as $0.50 per barrel.

5. The economics of investments for seasonal butane storage have been compared with the cost of additional vapor recovery. It has been shown that plants operating at butane recoveries in excess of 50 per cent, which can realize on additional recovered butane for only a fractional part of the year, may profit by providing storage for excess production of butanes during the summer to meet the seasonal demand rather than by increasing vapor-recovery facilities.

Portable X-ray Unit

LONG ISLAND CITY, June 28.—The latest development in X-ray equipment is portable X-ray unit mounted on a trailer chassis. It is said to be particularly suitable for field inspection of refinery equipment and installations. The machine is powerful enough to penetrate three inches of steel in a one-minute exposure, it is said.

Plant Activities In West Texas Fields

TULSA, June 28.—The activities that have been underway in the West Texas oil and gas fields the past several months are being followed by activities in both carbon black and natural gasoline production.

The Cabot Co., major carbon black manufacturers, have filed with the Texas Railroad Commission application for permit to construct carbon black plants in Ward and Winkler Counties. The company also is preparing to construct a natural gasoline plant in Winkler County with a capacity of 50,000,000 cu. ft. of gas daily. The carbon black plant is expected to have a capacity at present of 20,000,000 cu. ft. of gas a day. The Ward County carbon black plant will have similar capacity.

The Magnolia Petroleum Co. recently completed a natural gasoline plant near Kermit, Tex., in Winkler County. Capacity is listed at 18,000 gallons daily.

Other activities in that area include the completion a short time ago of the Empire Oil & Refining Co.'s natural gasoline plant at Odessa in Ector County. The Gulf Oil Corp. completed a plant at Monahans, Tex., last fall and the Smith Brothers plant, now in Winkler County, is the former American Natural Gasoline Co.'s plant which was up in the Panhandle until after stripping plant operations were curtailed.

There has been some new activity recently in the Panhandle area of Texas. The Cabot Co. has asked permission to increase the capacity of its carbon black plant in Hutchinson County. The J. M. Huber Corp. also has asked for permission to increase capacity of its carbon black plant from 45,000,000 cu. ft. daily to 75,000,000 cu. ft. daily. The Moore County Carbon Co. has asked for permission to burn 32,000,000 cu. ft. of gas a day.

The Magnolia Petroleum Co. is completing a stripping plant south of Sunray, in the Panhandle district, which will process about 35,000,000 cu. ft. of sour gas a day as soon as a carbon black plant is completed. The United-Phillips interests are preparing to process an additional 30,000,000 cu. ft. of gas a day, according to reports received here.

The Shamrock Oil & Gas Co. is preparing to increase the capacity of its stripping plant as a result of a three-way deal whereby gas from the Shell Petroleum Corp. and Sinclair-Prairie Oil & Gas Co.'s properties in Moore County will be processed by Shamrock. The United Carbon Co. is to increase capacity of its carbon black plant, which now is handling residue from the Shamrock natural gasoline plant, in order to handle the increased residue from the Shell-Sinclair properties.

The Panhandle Easter Pipe Line Co. is preparing to double the capacity of its natural gas line from the Panhandle and western Kansas areas. The gas from the Panhandle field is not stripped of its gasoline content until it reaches the large stripping plant at Liberal, Kans. This plant strips the gas from both the Panhandle and the Hugoton fields. Increase in capacity of line will mean increased natural gasoline production at the Liberal plant by fall, it was said.

The General Atlas Carbon Co., a Cities Service subsidiary, has petitioned the Texas Railroad Commission for permission to burn sweet dry gas in its plant near Pampa, Tex. The company stated that it is entitled to utilize the dry sweet gas in its chemical manufacturing process to develop its commodity "Gastex." The hearing on the petition has been set for May 19 at Austin, Tex. The General Atlas company recently applied for permit to build one of its plants in the Oklahoma Panhandle field near Guymon. In its application the company stated that it obtained some six or more pounds per 1000 cu. ft. of gas used. That compares with about 1.5 pounds per 1000 cu. ft. burned by the "open trough" method in general use in the Panhandle.

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Findlay Remains Bustling Town, Thanks to Ohio Oil Co.

By LAWRENCE E. SMITH,
N. P. N. Staff Writer

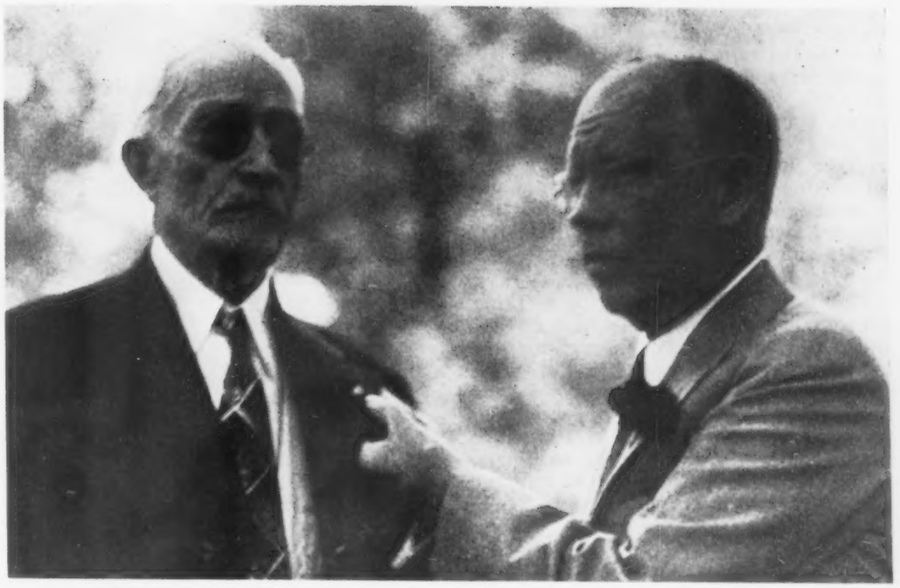
FINDLAY, O., June 26 THE prime test of a successful celebration is that everybody has a good time. The week-long observance of the fiftieth anniversary of two events, held in Findlay this week, fulfilled this requirement adequately and hundreds of visitors who came for all or part of the birthday observance went away highly pleased.

The two events were the founding of the Ohio Oil Co. and the application of natural gas "to the industrial arts" in Findlay. The two combined to lift the town from the rank of village and make it a boom city. Long ago it passed the boom era and is now a hustling, cheery small city.

Natural gas produced locally ceased to be a factor in the community life many years ago and the secondary boom phase, oil development, also virtually ceased a long time back. There remains the Ohio Oil Co. about which the life of the city revolves. This company operates as a producer in a dozen states and its chief interests now are west of the Mississippi River, but the Donnell family, firmly rooted in this northwestern Ohio community, elected to remain in Findlay and there the general offices, with several hundred employes, have been maintained through the years. Doubtless it will always be so, for other Donnells, sons of President O. D., are coming up in the oil tradition and Findlay is their first choice of places to live and to operate a company.

The celebration which came to an end today with a large street parade was the sort of thing that you would expect, knowing that O. D. Donnell was a chief backer and guiding genius of the whole affair. It was pleasurable, from beginning to end, but it was no carnival affair. The town was decorated, blue and gold banners flung across the streets and the merchants had fitted their trimmings and displays into the general scheme. But there were no street hawkers, no catch-penny devices of any kind. There were few opportunities to spend money. A community song festival Sunday night, an elaborate pageant Monday night and repeated Thursday night, an air carnival which brought numerous renowned fliers, a grand ball and an old-timers' dinner were features of the week. There was something for the youngsters, too. A parade of pets on Tuesday brought out the kittens, dogs, birds and anything else to which the affection of some child had been fastened.

All this, of course, required work. They began here in Findlay more than a year ago to prepare. Committees, general and special, were formed. Harry Botsford, advertising man and writer, of Titusville, Pa., came in as general manager of the Golden Celebration of Oil and Gas. W. D. Humphrey, a teacher in Findlay high school, became the historian and the material he dug up would fill many volumes but had to be condensed to a fraction of its weight so it could be published. L. Fitzpatrick, of the Ohio Oil Co., represented the company directly in the celebration planning, looking after his main job whenever he could find the time. And so on; there were too many people working at it to publish all the names here. They did a big job and they did it well.



A. W. Gordon, Tulsa, director of the Ohio Oil Co. in its early days, was awarded a service pin at Findlay's Golden Celebration of Oil and Gas. He is 94 years old. President O. D. Donnell is here pinning on the service emblem

The Findlay high school was decorated outside and in and converted into main headquarters for the big week. The gymnasium became Hospitality Hall and across the corridor were information offices, a press room, and the business office. Several thousand visitors registered, among them many who had not seen Findlay, their former home, in many years.

Picking just one at random, there was W. R. Martin, of the Martin-Decker Corp., Long Beach, Calif. Mr. Martin made this his first stop on a tour that will take him to every oil country in the world and will occupy about a year and a half. He was a boy when the Karg gas well, largest of its time, came in in 1886 and he witnessed that event. His presence was due to the fact that he was A.W.O.L. from school that afternoon, so ran the tale he told last week. He was brought to the microphone when the dedication of memorial tablets was broadcast over a national hook-up and Mr. Martin described the coming in of the Karg well. Another gas well, discovery of a commercial nature in the area, came in two years earlier. This was the Oesterlen and its memorial was likewise dedicated at the same meeting.

FIFTY years ago there was a celebration in Findlay and it was held to exult over the natural gas resources that had been discovered nearby. The supply was then thought to be limitless and the prophets of that day said Findlay would become the greatest industrial city of the U. S. Some people on hand at the present celebration remembered that former affair; one recalled that there was "quite a lot of champagne," an item conspicuously absent this time.

Not a great while after that first celebration, P. J. Shouvlin arrived on the scene and made his contribution to progress. He tinkered around with the existing ideas on gas engines and developed one that fitted into the production of oil. Pumping costs were thereby greatly reduced and this was important in the early history of the "Trenton rock" field of northwest Ohio. Mr. Shouvlin, for years the head of the Superior Gas Engine Co., is now chairman of the board of National

Supply Co., the early activities of which, under another name, go back to the 1880's. He was present during part of the festivities the past week and his talent for entertaining shines as brightly as ever.

To many an oil man and industrial leader the big event of the Findlay celebration was the annual golf party, when Host O. D. Donnell sets out to give his guests one day of relaxation. Starting in a small way some years ago, this has grown until this year's list included more than 300. They came from all parts of the country, some from California, Texas, New York and there were big names on the list. There were leaders in railroading, steel, banking, oil, and its attendant supply business. One train set out 16 Pullman cars at Findlay. The guests were driven to the Findlay Country Club, which was theirs for the day. There was golf for those who wanted to play and those who didn't seemed to have just as much fun as the golfers by visiting with old friends. There was a luncheon and when the golfers had finished with their labors there was dinner out under the stars, with music by a famous orchestra.

The host overlooked not one thing. Even the stand-by of the old-time oil man and the driller, Mail Pouch, was supplied to all who wanted it and there was a sizable demand for this "eatin' tobacco." Lemonade was the favorite tipple, for this party is one that is free of stimulated gaiety and it has always been so. Everybody is happy that it is run that way and an invitation to attend is taken as a high honor.

It was said before that Findlay revolves around the Ohio Oil Co. and it is likewise true that the growth of that company parallels the growth of the oil industry since the celebration of 50 years ago. The first financial statement of the company was dated Jan. 15, 1889. It was organized by a group of independents. H. M. Ernst was the president and J. R. Leonard, father of the well known Archie W. Leonard, now president of Devonian Oil Co., Tulsa, was vice-president. In that first report it was stated that the production for 1889 was 1,104,744 barrels. It had 146 wells. That same company operated as of last Dec. 31, 11,116 oil wells and produced in 1936 total of 23,023,936 barrels. Capitalization was shown on the first financial statement as $1,000,000; the common stock capitalization was reported Dec. 31 last at $59,235,791. For the 10 months ended with September, 1888, the Ohio Oil Co. reported payment of "taxes and miscellaneous expense," $4500. There is no grouping of taxes with miscellany today; for 1936 the Ohio Oil Co. and subsidiaries paid in direct taxes a total of $2,548,000.

That first report, rendered a little less than 50 years ago, did not say how many employes the company then had but the modern, streamlined Ohio Oil Co. reported average number of employes in 1936 as 5935. It sold 146,198,000 gallons of gasoline; 4,417,000 gallons of lubricating oil and more than 82,000,000 gallons of heavy products. Its pipelines moved 52,312,000 barrels of crude oil; it was a buyer of materials to the extent of $9,278,000 and disbursed to land and royalty owners $3,820,000, exclusive of bonuses for acreage.

Tribute was paid to P. J. Shouvlin, Springfield, O., during the Findlay celebration for having designed a gas engine in the early days of northwest Ohio development which enabled producers to pump wells more cheaply. Mr. Shouvlin, now chairman of the board, National Supply Co., made his appearance early at the celebration. This company, under another name, had its start also in the 1880's

Great Lakes Tanker

CHICAGO, June 28.—The fifth tanker in Standard Oil Co. of Indiana's Great Lakes fleet is under construction now and is expected to be delivered late this summer.

The new ship is of the single deck type, with an overall length of 465 feet, beam of 55 feet and molded depth of 28 feet. Capacity will be 45,000 barrels, or 6500 tons deadweight, on a draft of 18½ feet.

The tanker will have oil fired boilers and triple expansion engines of 2500 horsepower. N. J. Pluymert, New York, is the architect. Standard now has four tankers, one tug and one barge.

More Gulf Barges

Gulf Oil Corp. has authorized the Nashville Bridge Co. to increase to four an order of two tank barges.

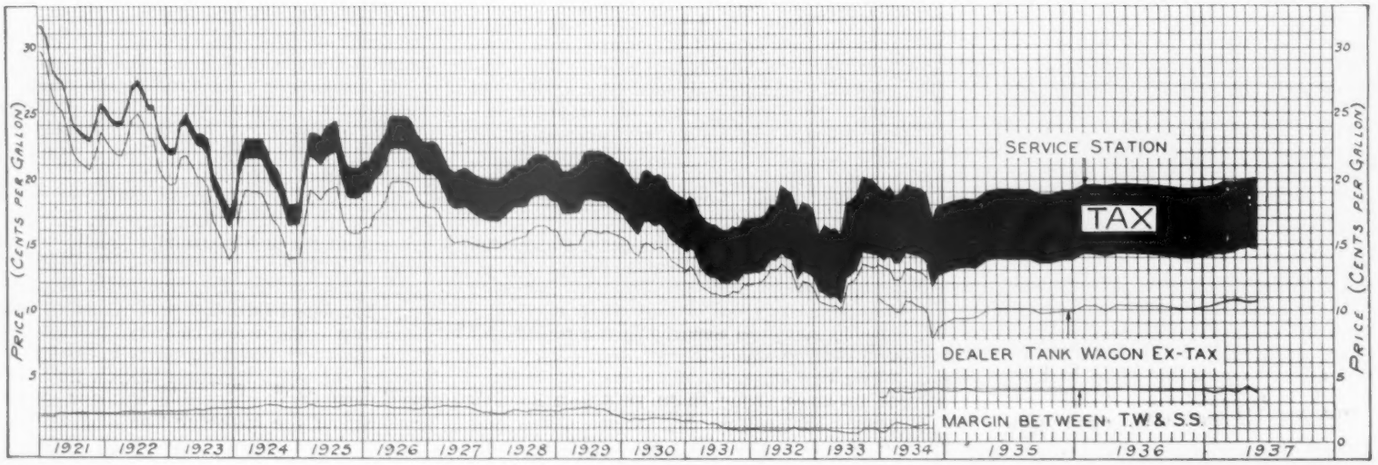
Federal Barges Attacked

Investigation of the advisability of curtailing operations of the Inland Waterways Corp. has been promised by Chairman Copeland of the Senate Commerce Committee. The committee, he said, will give particular attention to the assertion of some Senators that the federal barge service is no longer needed on the lower Mississippi.

Asphalt Pocket Reference

A new and enlarged "Asphalt Pocket Reference for Highway Engineers" has been issued by The Asphalt Institute, New York. Prevost Hubbard, chemical engineer, and B. E. Gray, chief highway engineer, are authors of the sixth edition. Its 17 chapters, contained in 240 pages, cover all phases of asphalt highway construction. Copies are available to engineers without charge. Address is 801 Second Ave., New York.

Trend of Gasoline Prices and Gasoline Taxes, at 50 Representative Cities



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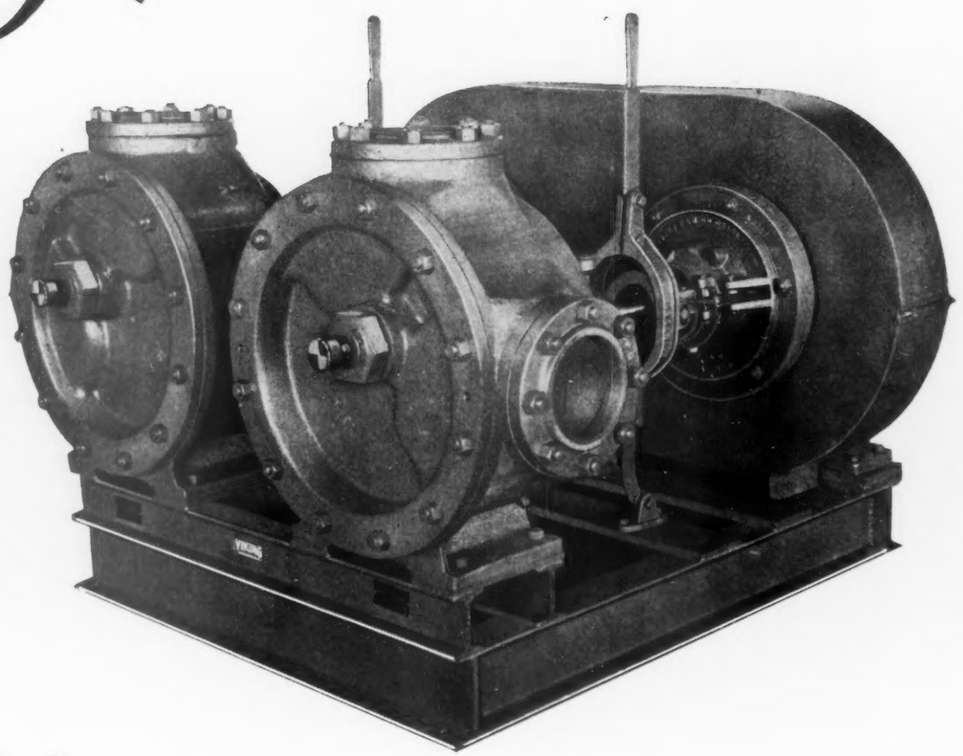

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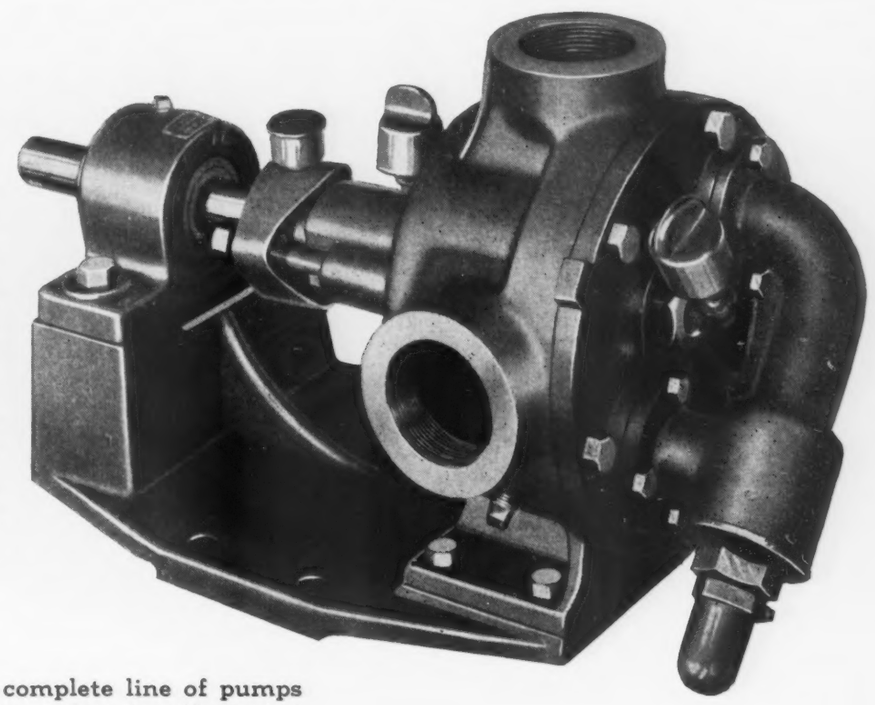

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Markets

At A Glance . . .

Mid-Continent: Natural gasoline prices higher.

Mid-Western: Open market trading lacking.

Eastern Seaboard: Kerosine most active product.

Pennsylvania: Gasoline prices firmer.

Gulf Coast: Market quiet, prices firm.

California: Low priced crude weakens market.

Wax: Crude scale prices advance.

Mid-Western

Gasoline Soft

N. P. N. News Bureau
CHICAGO, June 28

● Ideal motoring weather over much of the middle west failed to add materially to the position of gasoline in the Mid-Western market for the week ended June 26.

Prices for all grades were soft throughout the week's trading period, with gasoline freely available at quotations posted the week previous. Some shading of 5.75 cents for 68-70 octane grade was found. These lower priced offerings, however, had not become representative of general prices levels up to the close of the week.

Open market buying was slow all week, according to sellers' reports. Late in the week indications were that some buyers were obtaining gasoline more advantageously in tank wagon lots from jobbers with marginal contracts than they could buy in the wholesale market. The lack of open market orders was laid to this practice.

Ruling quotations for low octane grade were 4.875 cents up. 63-67 octane brought a minimum of 5.25 cents, while high octane commanded at least 5.75 cents in most quarters.

Kerosine was listless all week. Reports of lower priced offerings were heard, but general offerings ranged upwards from 4 cents.

Coastal

Market Is Quiet

N. P. N. News Bureau
NEW YORK, June 28

● Cargo markets at the Gulf were quiet the week ended June 26. Kerosine prices were slightly higher but, aside from this, little change was noted either in export or domestic quotations.

Some suppliers indicated there were standing orders in the market for any gas oil that might be offered and export showed some interest in gasoline and heavy fuel oil but there were no definite inquiries for the latter two products. High quality gas oil sold at 4.25 cents a gallon and 4.125 cents was the minimum asking price for the lighter colored oils as the week ended.

Gasoline was scarce and several suppliers indicated 6.625 cents as the minimum for 68 octane, 0.125 cent above the price paid in the last sale involving 65 octane.

Several suppliers were quoting 5 cents for kerosine, although they indicated that 4.875 cents probably could be done on firm offer.

Heavy fuel oil continued to be closely held. Majority of suppliers were quoting a firm $0.95 per barrel.

Pennsylvania

Gasoline Higher; Lubes Lower

N. P. N. News Bureau
CLEVELAND, June 28

● Gasoline prices generally were 0.25 cent higher and lubricating oils 1 cent per gallon lower in the western Pennsylvania refinery market last week. Trading was relatively light.

In the case of gasoline, light trading was due to scarcity of offerings. In many instances refiners reported being short of gasoline to meet their contract commitments and were in the market as buyers. All classes of buyers reported difficulty in obtaining open market offerings. Ordinary U. S. Motor gasoline was held at a minimum of 6 cents, minimum 65 octane at 7.5 cents, in both the upper and lower fields, although these prices were admittedly largely nominal.

Demand for lubricating oils was slow and several refiners, anxious for business, reduced their quotations 1 cent a gallon early in the week, offering all grades of dark and bright stocks and neutral oils at the lower prices. Bright stock particularly was said to be backing up at a number of plants. Several large inter-refinery sales were reported late in the week but open market demand from jobbers was light.

Kerosine, fuel oil and wax generally were steady. Some shading of kerosine prices was reported but confirmation of lower-priced sales was lacking.

N. P. N. Gasoline Index

	Dealer T.w. Cents per gal.	Tank Car
June 28	10.53	6.74
Month ago	10.68	6.75
Year ago	10.31	6.40

Dealer index is an average of "undivided" dealer prices, ex-tax, in 50 cities.

Tank car index is a weighted average of 13 wholesale markets for regular-grade gasoline.

Eastern

Kerosine Continues Active

N. P. N. News Bureau
NEW YORK, June 28

● Kerosine continued the most active product in eastern seaboard tank car markets last week. Prices were higher in all terminal centers along the coast. Contract shipments of gasoline were heavy, sellers reported.

The rise in kerosine prices was steady over the week. From a low of 5.75 cents, the New York harbor market reached 6.3 cents for tank cars by June 26. This is the price posted by Socony-Vacuum early in June and by Standard of New Jersey the third week in June. Barge-lot prices at New York harbor advanced from 5.5 cents to 5.875 cents, with many suppliers holding for 6.125 cents and reporting some sales.

Elsewhere along the seaboard prices generally were 0.5 cent higher, ranging from 6.25 cents at southern points to 6.75 cents at Portland.

Some suppliers reported more open market trading of gasoline but at the same time spot movement was light in comparison with the volume moving against contracts, they said. At least four companies at New York harbor advanced their quotations for 65 octane and above gasoline 0.25 cent to 7.5 cents for barges and 7.75 cents for tank cars.

Mid-Continent

Natural Gasoline Stronger

N. P. N. News Bureau
TULSA, June 28

● Undaunted by uncertainty of the refined gasoline markets, Mid-Continent natural gasoline prices took a decisive step upward last week. Unprecedented export and coastwise demand has cleared Texas, and to some extent, Oklahoma of most available supplies, and resulted in a scramble for any natural available both for immediate and future shipment. Higher prices were bid in attempts to attract small lots that might be held by some manufacturers. Price of 3.75 cents was bid for Grade 26-70, f.o.b. Breckenridge and Group 3.

Prices for Oklahoma and Kansas U. S. Motor gasoline dropped 0.125 cent last week despite an active demand. At least 13 refiners reported shipments had increased to point where substantial reductions were made in gasoline stocks. Other refiners refused to cut prices, contending reductions were unnecessary to move gasoline.

Wheat harvest and seasonal increases in consumption kept gasoline instructions pouring in, most of which, however, applied against contract, although open market sellers reported a "fair" movement.

Kerosine movement was listless as more third-grade gasoline was used as tractor fuel. Prices were unchanged.

Reductions in Pennsylvania lubricating oil had little effect yet on prices for Mid-Continent oils. Wax was in active demand.

Crude Oil Prices, Principal Grades

(Effective 7 a.m. as of dates given. Prices are $ per bbl. of 42 U. S. gals., at the well A.P.I. Gravity)

Pennsylvania Grade in Southwest Pa. Lines (Posted by Seep agency, June 7, '37)	$2.57
Lima, O. (Posted by Ohio Oil, Jan. 28, '37)	1.25
Mid-Continent, 36 Gravity: (Posted by Stanolind, Jan. 28, '37)	
Oklahoma-Kansas	1.22
North Texas	1.12
East Texas (Stanolind, May 22, '37)	1.35
Panhandle Texas, 36 Gravity: (Posted by Humble, Jan. 28, '37)	
Gray County	1.00
West Texas, 36 Gravity (Posted by Humble, Jan. 28, '37)	1.00
North Louisiana-Arkansas, 36 Gravity: (Posted by S. O. Louisiana, Jan. 28, '37)	1.14
Gulf Coastal, 36 Gravity (Posted by Humble, Jan. 28, '37)	1.33
Rocky Mountain: (Posted by Stanolind, Jan 28, '37)	
Elk Basin, Grass Creek light	1.30
Big Muddy	1.23
*California, 30 Gravity, unless otherwise noted:	
Los Angeles Basin: (All Effective Mar. 7, '36)	
Long Beach	1.21
Santa Fe Springs	1.08
Huntington Beach	1.22
San Joaquin Valley: (All Effective Feb. 26, '36)	
Kettleman Hills (36 Gravity)	1.31
Midway-Sunset	1.25
Coastal Area: (Effective Feb. 26, '36)	
Ventura Avenue (By Associated Oil)	0.89

*Posted by S. O. California, unless otherwise noted.

California

More Distress Gasoline

N. P. N. News Bureau

LOS ANGELES, June 26

With almost every "tea-pot" in the Los Angeles Basin operating, or getting ready to operate, on low priced Wilmington crude, or on a blend of this oil with lower sulfur stocks from other Basin fields, domestic markets presented anything but a happy prospect. Fuel oil and third-grade gasoline prices were expected to bear the brunt of this new supply.

Although there was no particular change in quotations on these products the past week, observers said the amount of distress goods in the offing was not encouraging. Spot lots of fuel oil from independent refineries in this area were reported available at $0.60 a barrel. The amount was not large but sufficient to depress the local market.

A delivered price of 7.75 cents to service stations in the Los Angeles area, exclusive of all tax, represented the low and was equivalent to a 7.50 cent refinery net back. The return price was even lower to a San Joaquin Valley operator who was offering upward of eight truck and trailer loads a day to large storage capacity stations in this area at the delivered price of 7.75 cents.

High tanker rates and a desire on the part of boat owners to confine service to short trips contributed to the inability of Pacific Coast suppliers to compete successfully with the Gulf on inquiries for bulk quantities from Atlantic foreign buyers. The prevailing idea of prices for a 65 octane and above product continued in the range of 5.75 to 6 cents.

Wax

NEW YORK, June 28.—Crude scale wax prices advanced again in coastal markets the week ended June 26. Fully refined grades were generally unchanged.

Demand for white crude scale was largely from domestic buyers, traders reported, although they said there were some indications there would be a revival of export interest shortly.

The 122-124 and 124-126 A. M. P. white scale waxes were quoted largely at 2.95 to 3 cents a pound, up 0.1 cent on the low end of the market. Sellers reported no difficulty in obtaining orders at these prices.

Fuel Oil . . .

NEW YORK, June 28. — Continuation of the upward trend of prices for light oils featured eastern seaboard fuel oil markets last week. Prices were higher at a number of terminal points.

Activity was confined to large-company buying for storage, although jobbers also showed considerable interest in laying in supplies. Offerings were scarce and buyers were bidding higher prices to obtain their requirements. General market prices for No. 1 oil were higher at all points along the seaboard, and Nos. 2 and 4 oils were quoted higher at Boston, Providence and Philadelphia.

Heavy fuels remained firm. There appeared to be few anxious sellers of these oils.

* * *

TULSA, June 28. — Inquiry for light fuel oil was listless last week, according to reports of most Mid-Continent refiners. Sellers believed inquiries the previous week were mostly exploratory and that, when "bargains" could not be obtained, buyers withdrew.

Refiners continued to store their output of light fuels. Prices remained steady, with offerings limited to odd cars. Railroads were taking out large quantities of heavy fuel, preparatory to the big rush when wheat starts moving.

* * *

CHICAGO, June 28. — Fuel oils faced their usual summer inactivity the week ended June 26, and little was outstanding in the way of trade developments.

No. 1 grade was relatively free, as demand for this oil as tractor fuel waned.

While some buyers were reported feeling out the light fuel oil market for supplies for the coming heating oil season, little or no buying of this nature could be checked.

Strikes in the Calumet region have built up available supplies of industrial grades. Prices were lower on several grades, with shading of other grades encountered.

TANK WAGON MARKETS, HEATING OILS

Prices in Effect June 28, 1937

Following are tank wagon prices of various grades of heating oil at the points shown in various territories. Prices are in cents per gallon.

	No. 1	No. 2	No. 3	No. 4
S. O. NEW JERSEY				
Newark, N. J	*	7.00	7.00	7.00
Atlantic City, N. J.	*	6.75	6.75	6.75
Baltimore, Md.	7.50	7.00	7.00	7.00
Washington, D. C.	7.75	7.25	7.25	7.25
SOCONY-VACUUM OIL CO., INC. (S. O. New York Division)				
New York City	*	7.50	7.50	7.50
Albany, N. Y.	*	7.50	7.50	7.50
Rochester, N. Y.	*	7.50	7.50	7.50
Boston, Mass.	*	7.00	7.00	7.00
Bangor, Me.	*	8.00	8.00	8.00
Manchester, N. H.	*	8.00	8.00	8.00
Burlington, Vt.	*	8.00	8.00	8.00
New Haven, Conn.	*	7.50	7.50	7.50
Providence, R. I.	*	6.75	6.75	6.75

*Prices for No. 1 fuel in S. O. New Jersey and Socony-Vacuum territories same as for kerosine, which see in tank wagon table for various cities; prices change with kerosine.

	No. 1	No. 2	No. 3	No. 4
ATLANTIC REFINING				
Philadelphia, Pa.	7.25	6.50	6.50	6.50
Allentown, Pa.	7.25	6.50	6.50	6.50
Wilmington, Del.	7.75	7.00	7.00	7.00
Springfield, Mass.	9.00	7.50	....	7.50
Worcester, Mass.	9.00	7.50	....	7.50
Hartford, Conn.	9.00	7.50	....	7.50

S. O. OHIO

*Ohio Statewide	8.00	8.00	7.50	6.75

Note: S. O. Ohio prices are for hose dumps, bucket dumps are 0.5c per gallon higher.

*Except Cleveland Division and City of Toledo. In Cleveland Division (Cuyahoga, Lake and Geauga counties), No. 1 price is same as statewide; Nos. 2, 3 and 4 are 0.5c higher; No. 5 is priced 0.25c lower than No. 4. In Toledo No. 2 is 0.5c lower than statewide, others same.

S. O. INDIANA

Stanolex Fuel and Furnace Oils

	No. 1 Fuel	Stanolex Furnace
Chicago	7.00	7.00
Indianapolis	....	*11.7
Detroit	....	7.1
Milwaukee	8	7.3
Minneapolis	7.5	7.5
Sioux City	7.1	7.1
St. Louis	7.5	6.8
Kansas City	6.5	6.5

*Includes state tax of 4c.

Note: Small-lot deliveries of light fuel oils range up to 2c higher than above quotations.

REFINERY TANK CAR MARKETS

All prices on this page are publisher's opinion of open market quotations or sales, for spot shipment (10 to 15 days). Prices in cents per gallon, except heavy fuel oils in dollars per barrel, tank car lots, f.o.b. refineries in districts designated, except where otherwise noted. Inter-refinery and export prices not included, unless so stated in the respective markets. Federal, state or municipal taxes not included. Prices quoted apply on products made from legally produced crude.

Prices effective June 28, 1937

Gasoline *and* Naphtha

OKLAHOMA

U. S. Motor gasoline:

62 octane and below	5.00 – 5.25
63-67 octane	5.375– 5.75
68-70 octane (regular)	6.00 – 6.125
60-62, 400 e.p. gasoline	5.00 – 5.25
64-66, 375 e.p. gasoline	*5.25 – 5.375
68-70, 350-360 e.p. gasoline	*5.25 – 5.50

WESTERN PENNA.

Bradford-Warren:

52-54 naphtha	*5.875– 6.00

Motor gasoline:

U. S. Motor (58-62°)	6.00 – 6.125
Minimum 60 octane	*7.375– 7.50
Minimum 65 octane	7.50 – 7.625
64-66, 390 e.p. gasoline	6.125– 6.25
68-70, 350-360 e.p. gasoline	6.25 – 6.375

Other districts:

52-54 naphtha	*5.75 – 5.875
54-56 naphtha	*5.875– 6.00

Motor gasoline:

U. S. Motor (58-62°)	6.00 – 6.125
Minimum 60 octane	7.375– 7.50
Minimum 65 octane	7.50 – 7.75
64-66, 390 e.p. gasoline	6.00 – 6.125
68-70, 350-360 e.p. gasoline	6.25 – 6.375

CALIFORNIA (3c tax to be added to prices if used in state)

54-58 U. S. Motor, 437 e.p. for in-state shipment	7.75 – 9.25
54-58 U. S. Motor, 437 e.p. for out-side state shipment	8.25 – 8.50
58-61, 375-400 e.p. gasoline, 65 octane and above	8.50 – 9.75

†NORTH TEXAS (For shipment to Texas and New Mexico destinations; Group 3 prices quoted on northern shipments).

U. S. Motor gasoline:

62 octane and below	5.125– 5.25
63-67 octane	5.50 – 5.625
68-70 octane (regular)	6.00 – 6.25
60-62, 400 e.p. gasoline	*5.125– 5.375

KANSAS (For Kansas destinations only)

U. S. Motor gasoline:

62 octane and below	5.375– 5.625
68-70 octane (regular)	6.375– 6.625

†WEST TEXAS and NEW MEXICO

U. S. Motor gasoline:

62 octane and below	5.125
63-67 octane	5.50
68-70 octane (regular)	6.125

†EAST TEXAS

60-62, 400 e.p. gasoline	*5.25

NORTH LOUISIANA (For shipment within Louisiana and into Arkansas)

U. S. Motor gasoline:

62 octane and below	5.50 – 5.625
63-67 octane	5.75 – 6.00
68-70 octane (regular)	6.50

ARKANSAS (For shipment within Arkansas and into Louisiana).

U. S. Motor Gasoline:

62 octane and below	5.50
63-67 octane	6.00

OHIO (Quotations of S. O. Ohio. Delivered any point in Ohio).

U. S. Motor gasoline	8.75
Above 65 octane	9.00

Natural Gasoline

(Prices are those to blenders on freight basis shown below. Shipments, however, may originate in other Mid-Continent manufacturing districts, such as Panhandle Texas, Southwest Texas or Kansas.)

F.O.B. GROUP 3

Grade 26-70	3.75

F.O.B. BRECKENRIDGE

Grade 26-70	3.75

CALIFORNIA (F.o.b. plants in Los Angeles basin)

75-85, 375-390 e.p. for blending	7.75

*Nominal.

‡Only one refiner quoting.

†Refiners report they generally receive from 0.25c to 0.5c per gallon more for gasoline and kerosine for local or differential territory shipment.

Kerosine

WESTERN PENNA.

Bradford-Warren:

45 w.w. kerosine	4.75 – 4.875
46 w.w. kerosine	4.875– 5.00
47 w.w. kerosine	5.00 – 5.125

Other districts:

45 w.w. kerosine	4.75 – 4.875
46 w.w. kerosine	4.875– 5.00
47 w.w. kerosine	5.00 – 5.125

OKLAHOMA

41-43 w.w. kerosine	4.125– 4.25
42-44 w.w. kerosine	4.25 – 4.50

KANSAS (For Kansas destinations only).

41-43 w.w. kerosine	4.375– 4.50
42-44 w.w. kerosine	4.50 – 4.75

†NORTH TEXAS (For shipment to Texas and New Mexico destinations; Group 3 prices quoted on northern shipments).

41-43 w.w. kerosine	4.25 – 4.375

†EAST TEXAS

41-43 w.w. kerosine	*4.00 – 4.25

NORTH LOUISIANA (For shipment within Louisiana and into Arkansas).

41-43 w.w kerosine	4.625

ARKANSAS (For shipment within Arkansas and and into Louisiana).

41-43 w w. kerosine	‡4.75

CALIFORNIA

*40-43 w.w. kerosine	5.00 – 6.50

*Formerly 38-40.

Gas *and* Fuel Oils

WESTERN PENNA.

Bradford-Warren:

36-40 fuel oil	4.50 – 4.625

Other districts: (Excluding Pittsburgh District Prices).

36-40 fuel oil	4.25 – 4.375

OKLAHOMA

No. 1 white fuel oil	3.875– 4.00
No. 1 straw fuel oil	3.625– 3.875
No. 2 straw fuel oil	3.50 – 3.625
No. 2 dark fuel oil	3.375– 3.50
U. G. I. gas oil	3.00 – 3.25
28-30 zero	3.125– 3.375
28-30	‡$1.25
24-26	$0.875–$0.925
18-22	*$0.825–$0.90
14-16	*$0.80 –$0.85

KANSAS (For Kansas destinations only).

No. 1 p.w. fuel oil	4.25
10-14 fuel oil	$0.775–$0.85

NORTH TEXAS (For shipment to Texas and New Mexico; Group 3 prices quoted on northern shipments).

No. 1 white, fuel oil	*4.00
U. G. I. gas oil	2.875
24-26 fuel oil	$0.85 –$0.875
18-22 fuel oil	$0.80 –$0.825

NORTH LOUISIANA (For shipment within Louisiana and into Arkansas).

No. 2 fuel oil	3.50 – 3.625
20-24 fuel oil	$1.10 –$1.15
16-20 fuel oil	$0.95 –$1.00
10-14 fuel oil	$0.80 –$0.85

ARKANSAS (For shipment within Arkansas and into Louisiana).

No. 2 fuel oil	‡3.625
28-30 gas oil, zero	‡3.375

CALIFORNIA

San Joaquin Valley:

Heavy fuel oil	$0.65 –$1.00
Light fuel oil	$0.85 –$1.10
Diesel fuel oil (per gallon)	3.00 – 4.00
Stove distillate (per gallon)	3.25 – 5.00

Los Angeles:

Heavy fuel oil	$0.65 –$1.10
Light fuel oil	$0.90 –$1.20
Diesel fuel (per gallon)	2.875– 4.00
Stove distillate (per gallon)	3.00 – 5.00

San Francisco:

Heavy fuel oil	$1.15
Light fuel oil	$1.25
Diesel fuel (per gallon)	4.50
Stove distillate (per gallon)	5.50

Note: See story on new Pacific specifications on above fuel oils, June 23 issue, page 19. All above heavy fuels meet Pacific specification 400; light fuel, spec. 300; Diesel fuels, spec. 200; and stove distillate, spec. 100.

Neutral Oils

WESTERN PENNA.

Viscous Neutrals (Viscosity at 70° F.)

200 Vis. (180 at 100°) No. 3 color, 420-425 flash:	
0 pour test	29.00 –29.50
10 pour test	28.00 –28.50
15 pour test	27.50 –28.00
25 pour test	26.50 –27.00
180 Vis. (165 at 100) No. 3 color, 410-415 flash:	
25 pour test	25.00 –25.50
150 Vis. (143 at 100) No. 3 color, 400-405 flash:	
0 pour test	24.50 –25.00
10 pour test	23.50 –24.00
15 pour test	23.00 –23.50
25 pour test	22.00 –22.50

SOUTH TEXAS

Vis. Color

Pale Oils: (*Viscosity at 100° F.; pour test 0*)

100 No. 1½-2½	5.25 – 5.50
200 No. 2-3	7.25 – 7.50
300 No. 2-3	7.75 – 8.00
500 No. 2½-3½	8.75 – 9.00
750 No. 3-4	9.25 – 9.50
1200 No. 3-4	9.75 –10.00
2000 No. 4	10.00 –10.25

Red Oils:

200 No. 5-6	7.25 – 7.50
300 No. 5-6	7.75 – 8.00
500 No. 5-6	8.75 – 9.00
750 No. 5-6	9.25 – 9.50
1200 No. 5-6	9.75 –10.00
2000 No. 5-6	10.00 –10.25

Note: South Texas red oil prices shown above cover oils with green cast; blue cast red oils are slightly lower in some cases.

MID-CONTINENT (Viscosity at 100° F.; F.o.b. Tulsa basis).

(0 to 10 Pour Point)

Pale Oils:

Vis. Color

60-85—No. 2	5.50
86-110—No. 2	6.00
150—No. 3	9.00
180—No. 3	10.00
200—No. 3	10.50
250—No. 3	11.50
280—No. 3	12.50
300—No. 3	13.00

Red Oils:

180—No. 5	9.00
200—No. 5	9.50
250—No. 5	10.50
280—No. 5	11.50
300—No. 5	11.75

Note: Viscous oils, 15-25 pour point, generally are quoted 0.5c under 0-10 pour point oils. Non-viscous oils, 15-25 pour point generally are quoted 0.25c under 0-10 pour point oils. Viscous oils (150-300 vis.), No. 4 color, generally are quoted 0.5c above No. 5 color oils.

CHICAGO (Vis. at 100° F.)

Pale Oils **0 to 10 pour point:

Vis. Color

60-85—No. 2	7.25
86-110—No. 2	7.75
150—No. 3	10.00
180—No. 3	11.00
200—No. 3	11.50
250—No. 3	12.50

Red Oils

180—No. 5	10.00
200—No. 5	10.50
250—No. 5	11.50
280—No. 5	12.50
300—No. 5	12.75

**Viscous oils, 15 to 30 pour point are quoted 0.5c lower. 60-85 and 86-110 No. 2 non-viscous oils, 15 to 30 pour point, are quoted 0.25c lower, beginning March 15, 1937. To obtain delivered prices in Chicago, add 0.25c per gal.

Cylinder Stocks

MID-CONTINENT (F.o.b. Tulsa basis).

Bright Stocks:

190-200 Vis. at 210° D	23.00
150-160 Vis. at 210° D:	
0 to 10 pour point	20.00
10 to 25 pour point	19.50
25 to 40 pour point	19.00
150-160 Vis. at 210° E	19.00

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The Ohio Oil Company, one of the world's largest producers of crude oil, through its many wide spread enterprises, maintains producing, refining and marketing operations.
High quality LINCO GASOLINES and MARATHON MOTOR OILS are made at our own strategically located refineries, insuring constant supply to hundreds of jobber and dealer outlets for public demand, which is increasing more and more each year because our dependable products are preferred by motorists everywhere.
The Ohio Oil Company invites jobbers to investigate the Exclusive Territory Franchise opportunities TODAY
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LINCO
THE OHIO OIL COMPANY
GENERAL OFFICES - - - FINDLAY, OHIO
ROBINSON, ILLINOIS
TULSA, OKLAHOMA
FT. WORTH, TEXAS

REFINERY TANK CAR MARKETS

All prices on this page are publisher's opinion of open market quotations or sales, for spot shipment (10 to 15 days) unless otherwise stated. Prices in cents per gallon, except heavy fuel oils in dollars per barrel, tank car lots, f.o.b. refineries in districts designated, except where otherwise noted. Inter-refinery and export prices not included, unless so stated in the respective markets. Federal, state or municipal taxes not included. Prices quoted apply on products made from legally produced crude.

Prices effective June 28, 1937

Cylinder Stocks (cont'd)

Mid-Continent (cont'd)

120 Vis. at 210° D:	
0 to 10 pour point	19.00
10 to 25 pour point	18.50
25 to 40 pour point	18.00
600 Stm. Rfd. Dark Green	5.50 – 7.50
600 Stm. Rfd. Olive Green	7.00 – 9.50
631 Steam Refined	‡17.50
Black Oil	3.50 – 4.00

CHICAGO (Viscosity at 210°)

Unfiltered Steam Refined:	
140	9.00
160	10.00
200	11.00
Bright stocks, 160 vis. at 210. No. 8 color:	
0 to 10 pour point	21.75
15 to 25 pour point	21.25
30 to 40 pour point	20.75
E filtered Cyl. Stock	15.50

To obtain prices delivered in Chicago, add 0.25c per gal.

‡Only one refiner quoting.

WESTERN PENNA.

600 stm. rfd. filterable	16.00 –16.50
650 steam refined	18.00 –18.50
600 flash	19.00 –19.50
630 flash	23.00 –23.50
600 Warren E	19.00
Bright stock, 145-155 vis. at 210°, 540-550 flash, No. 8 color:	
10 pour test	27.00 –27.50
15 pour test	26.00 –26.50
20 pour test	25.00 –25.50
25 pour test	24.00 –24.50

Petrolatums

WESTERN PENNA. (Per pound, in barrels, carload lots. In tank cars, 0.5c per pound less).

Snow white	6.625– 6.75
Lily White	5.625– 5.75
Cream White	4.625– 4.75
Light Amber	2.75 – 2.875
Amber	2.50 – 2.625
Red	2.125– 2.375

Wax

WESTERN PENNA. (Per pound, f.o.b. New York basis)

122-124 wh. crude scale, A.m.p.	2.90 – 2.95
124-126 wh. crude scale, A.m.p.	2.95 – 3.00

OKLAHOMA (Per pound in barrels; in a few instances, per pound in burlap bags).

124-126 wh. crude scale, A.m.p.	3.00

CHICAGO (In bags, carload lots. Melting points are E.M.P. (A.S.T.M.) methods; add 3° F. to convert into A.m.p.)

Fully refined:	
122-124	4.65 – 4.75
125-127	4.90 – 5.00
127-129	5.05 – 5.15
130-132	**5.45 – 5.55
132-134	**5.70 – 5.80
135-137	**6.45 – 6.55

**Same prices quoted in bags or slabs loose.

MID-WESTERN TANK CAR MARKET

Prices are those made by Chicago sellers, on Group 3 (Oklahoma) freight basis, although shipments may originate in other South-western or Mid-western refining districts

Gasoline

U. S. Motor gasoline:	
62 octane and below	4.875– 5.25
63-67 octane	5.25 – 5.50
68-70 octane (regular)	5.75 – 6.125
60-62, 400 e.p.	5.00 – 5.25
64-66, 375 e.p.	‡5.25
68-70, 350-360 e.p.	‡5.375

Kerosine

41-43 w.w.	4.00 – 4.25
42-44 w.w.	4.125– 4.375

*Nominal.

‡Only one seller quoting.

Fuel *and* Gas Oils

Domestic:

No. 1 prime white	3.75 – 4.00
No. 1 straw	3.50 – 3.75
No. 2 straw	3.375– 3.50
No. 2 dark	3.125– 3.375
No. 3	3.00 – 3.25
No. 4	$1.05 –$1.15
No. 5	$0.85 –$0.90

Industrial:

No. 4	$0.95 –$1.05
No. 5	$0.75 –$0.85

Industrial (cont'd)

No. 6	$0.70 –$0.80
U. G. I. gas oil	2.875– 3.25

Naphtha and Solvent

Stoddard solvent	6.875
Cleaners' naphtha	7.375
V. M. & P. naphtha	7.375
Mineral spirits	6.375
Rubber solvent	7.375
Lacquer diluent	8.375

DAILY GASOLINE PRICES

Daily range of gasoline prices as reported in PLATT'S OILGRAM, (Week Ended June 25, 1937)

	June 21	June 22	June 23	June 24	June 25
U. S. Motor, 62 octane and below:					
*North Texas	5.125– 5.25	5.125– 5.25	5.125– 5.25	5.125– 5.25	5.125– 5.25
West Texas	5.125	5.125	5.125	5.125	5.125
Oklahoma	5.125– 5.25	5.125– 5.25	5.125– 5.25	5.125– 5.25	5.00 – 5.25
Mid-Western (Group 3 basis)	4.875– 5.25	4.875– 5.25	4.875– 5.25	4.875– 5.25	4.875– 5.25
U. S. Motor, 63-67 octane:					
*North Texas	5.50 – 5.625	5.50 – 5.625	5.50 – 5.625	5.50 – 5.625	5.50 – 5.625
West Texas	5.50	5.50	5.50	5.50	5.50
Oklahoma	5.50 – 5.625	5.50 – 5.625	5.50 – 5.625	5.50 – 5.75	5.375– 5.75
Mid-Western (Group 3 basis)	5.25 – 5.50	5.25 – 5.50	5.25 – 5.50	5.25 – 5.50	5.25 – 5.50
U. S. Motor, 68-70 octane (regular)					
*North Texas	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25
West Texas	6.125	6.125	6.125	6.125	6.125
Oklahoma	6.125– 6.25	6.125– 6.25	6.125– 6.25	6.125– 6.25	6.00 – 6.25
Mid-Western (Group 3 basis)	5.75 – 6.125	5.75 – 6.125	5.75 – 6.125	5.75 – 6.125	5.75 – 6.125
Motor Gasoline, 60-64 octane					
New York harbor	†7.25	†7.25	†7.25 – 7.50	†7.25 – 7.50	†7.25 – 7.50
Philadelphia district	†7.25	†7.25	†7.25	†7.25	†7.25
Baltimore district	†7.25	†7.25	†7.25	†7.25	†7.25
Motor Gasoline, 65 octane & above					
New York harbor	†7.50	†7.50	†7.50 – 7.75	†7.50 – 7.75	†7.50 – 7.75
Philadelphia district	†7.50	†7.50	†7.50	†7.50	†7.50
Baltimore district	†7.50	†7.50	†7.50	†7.50	†7.50
U. S. Motor Gasoline, 58-62°					
Bradford-Warren (Western Penna.)	6.00 – 6.125	6.00 – 6.125	6.00 – 6.125	6.00 – 6.125	6.00 – 6.125
Other districts (Western Penna.)	6.00 – 6.125	6.00 – 6.125	6.00 – 6.125	6.00 – 6.125	6.00 – 6.125
Motor Gasoline, Minimum 60 octane					
Bradford-Warren (Western Penna.)	†7.375– 7.50	†7.375– 7.50	†7.375– 7.50	†7.375– 7.50	†7.375– 7.50
Other districts (Western Penna.)	7.375– 7.50	7.375– 7.50	7.375– 7.50	7.375– 7.50	7.375– 7.50
Motor Gasoline, Minimum 65 octane					
Bradford-Warren (Western Penna.)	†7.50 – 7.625	†7.50 – 7.625	†7.50 – 7.625	†7.50 – 7.625	†7.50 – 7.625
Other districts (Western Penna.)	7.50 – 7.75	7.50 – 7.75	7.50 – 7.75	7.50 – 7.75	7.50 – 7.75

*For shipment to Texas and New Mexico destinations; Group 3 prices are quoted on northern shipments.

†Nominal.

TANK WAGON, SERVICE STATION MARKETS

Tax column includes 1c federal tax, state gasoline tax, also city and county taxes as indicated in footnotes, and inspection fees, as shown in general footnote. These prices in effect June 28, 1937, as posted by principal marketing companies at their headquarters offices, but subject to later corrections

S. O. New Jersey

ESSOLENE

	Consumer Tank Car	Dealer T.W.	Taxes	Posted S.S.	Kerosine T.W.
Atlantic City, N. J.	7.5	9	4	*	8
Newark, N. J.	7.5	9	4	*	8
Annapolis, Md.	8.6	10.1	5	*	10
Baltimore, Md.	8	9.5	5	18	8.5
Cumberland, Md.	9.4	11.9	5	*	10
Washington, D. C.	8	9.5	3	16	9
Danville, Va.	9.2	11.7	6	*	12.9
Norfolk, Va.	8	10.5	6	*	11.5
Petersburg, Va.	8.3	10.8	6	*	11.7
Richmond, Va.	8.3	10.8	6	*	11.7
Roanoke, Va.	9.5	12	6	*	12.9
Charleston, W. Va.	8.8	11.3	6	*	12.6
Parkersburg, W. Va.	8.1	10.6	6	*	11.2
Wheeling, W. Va.	9	10.5	6	*	12.2
Charlotte, N. C.	9.4	11.9	7	*	12.6
Hickory, N. C.	9.9	12.4	7	*	13
Mt. Airy, N. C.	9.7	12.2	7	*	12.8
Raleigh, N. C.	9	11.5	7	*	12.1
Salisbury, N. C.	9.5	12	7	*	12.7
Charleston, S. C.	8	10.5	7	*	11.1
Columbia, S. C.	9	11.5	7	*	12.1
Spartanburg, S. C.	9.7	12.2	7	*	12.9

*S. O. New Jersey transferred stations to dealers; no prices available.

Price basis to undivided dealers: Dealer t.w. price less .0.5c per gal.

Price basis to commercial consumers: To contract accounts, purchasing at least one full compartment at a time by hose connection: Effective March 12, 1937, in New Jersey, and March 8 in Maryland, District of Columbia, and in Arlington and Fairfax Counties in Virginia, on yearly purchases: from 2,500 to 100,000 gals., consumer t.w. price at time and place of delivery; 100,000 gals. per year, consumer tank car price, plus 0.5c per gal. Generally consumer t.w. price in foregoing states is equivalent of dealer t.w. price, less 0.5c per gal.

Effective May 15, 1937, on Essolene and Esso (by tank wagon) in North and South Carolina, West Virginia and Virginia (except Arlington and Fairfax Counties, which see above), commercial consumers taking deliveries of 50 gals. (West Va. 100 gals.) or more at one time will be billed at the posted consumer t.w. price. Deliveries less than 50 gals. (West Va. 100 gals.) will be billed at 4c per gal. over posted consumer t.w. price. Generally, posted consumer t.w. price will be equivalent to the dealer price less 0.5c per gal.

Kerosine Discount: 1c off t.w. price for 25 gals or more, under contract thru territory (Baltimore City contract not necessary) except no discount in state of New Jersey.

Socony-Vacuum Oil Co., Inc.

(S. O. New York Division)

SOCONY MOBILGAS

	Consumer Tank Car	"Split" Dealer T.W.	Taxes	Total "Split" Dealer T.W.	Kerosine T.W.
Metropolitan N. Y. City: Boroughs of Manhattan, Bronx and Brooklyn (Kings and Queens)	8.5	10	*5	15	9
Borough of Richmond (Staten Is.)	8.5	10	*5	15	9
Albany, N. Y.	8.5	10	5	15	9
Binghamton, N. Y.	9.25	10.8	5	15.8	9.5
Buffalo, N. Y.	8.67	10.3	5	15.3	8.5
Jamestown, N. Y.	8.28	10.8	5	15.8	8.25
Plattsburg, N. Y.	8.9	10.9	5	15.9	9.5
Rochester, N. Y.	8.74	10.3	5	15.3	8.5
Syracuse, N. Y.	8.7	10.3	5	15.3	9
Danbury, Conn.	8.8	10.3	4	14.3	9
Hartford, Conn.	9.1	10.6	4	14.6	9
New Haven, Conn.	8.5	10	4	14	9
Bangor, Me.	9.1	11.3	5	16.3	9.5
Portland, Me.	8.5	10.8	5	15.8	8.75
Boston, Mass.	8.5	8.8	4	12.8	8.5
Concord, N. H.	9.2	11.8	5	16.8	9.5
Lancaster, N. H.	10.1	12.8	5	17.8	10.25
Manchester, N. H.	9	11.3	5	16.3	9.5
Providence, R. I.	8.5	9	4	13	8.25
Burlington, Vt.	8.9	10.9	5	15.9	9.5
Rutland, Vt.	9.2	11.2	5	16.2	9.75

*Plus 2% city sales tax computed at time of each sale.

Note: Socony-Vacuum has transferred all service stations to dealers; no prices available.

Price basis to undivided dealers: 0.5c less than "split" dealer t.w.

Price basis to commercial consumers: Effective about Nov. 15, 1936 in New York and New England, for tank wagon delivery: monthly purchases of 25,000 gals. or over, pay consumer tank car price at point of delivery, plus 0.5c gal.; monthly purchases of 5,000 to 25,000 gals., pay undivided dealer tank wagon price at point of delivery; monthly purchases of less than 5,000 gals., pay divided dealer tank wagon price at point of delivery. Private consumers pay undivided dealer tank wagon price at point of delivery, plus 2c gal.

Atlantic Refining

ATLANTIC WHITE FLASH GASOLINE

	Commercial Tank Car	All Tax	Total Dealer T.W.	S.S.	Kerosine T.W.
Philadelphia, Pa.	7.5	5	14	17.5	10.5
Pittsburgh	8.5	5	15.5	20	11
Allentown	8.25	5	14.5	**	11
Erie	8	5	14.5	**	10
Scranton	8.25	5	14.5	**	11
Altoona	8.5	5	15.5	**	11
Harrisburg	8.25	5	14.5	**	11
Williamsport	8.5	5	15.5	**	11
Dover, Del.	...	5	14	**	11
Wilmington	...	5	13.5	**	11
Boston, Mass.	...	4	13	**	8.5
Springfield, Mass.	...	4	14.8	**	9
Worcester, Mass.	...	4	13.8	**	9
Fall River, Mass.	...	4	13	**	8.5
Hartford, Conn.	...	4	14.6	**	9
New Haven, Conn.	...	4	14	**	9
Providence, R. I.	...	4	13	**	8.25
Atlantic City, N. J.	...	4	13	**	8
Camden, N. J.	...	4	13	**	8
Trenton, N. J.	...	4	13	**	8
Annapolis, Md.	...	5	15.1	**	9.5
Baltimore, Md.	...	5	14.5	**	8.5
Hagerstown, Md.	...	5	15.5	**	10
Richmond, Va.	...	6	16.8	**	11.7
Wilmington, N. C.	...	7	17.6	**	11.3
Brunswick, Ga.	...	7	16	**	*13
Jacksonville, Fla.	...	8	17.5	**	11

*Georgia has kerosine tax of 1c per gal., not included in above price.

**Atlantic Refining transferred stations to dealers; no prices available.

Price basis to undivided dealers: Dealer t.w. less 0.5c per gal.

Price basis to commercial consumers: in Penna. and Delaware, effective Mar. 11, 1937, on yearly gasoline purchases to contract accounts taking full compartment hose deliveries, using 100,000 gals. or more per year, tank car price plus 0.5c per gal.; consumers taking less than 100,000 gals., undivided dealer price. Consumers under contract and not under contract, taking less than full compartment delivery, and consumers not under contract taking full compartment delivery, get divided dealer price. Consumers taking less than 25 gals., t.w. delivery, get 4c above undivided dealer price.

Discount on kerosine: Effective Oct. 29, 1936, in Pennsylvania and Delaware, 2c per gal. off t.w. price on t.w. deliveries of 25 gals. or more at one time.

S. O. Ohio

SOHIO X-70 GASOLINE

	All Tax	**Commercial T.W.	†Divided Dlr.	Kerosine T.W.
Ohio State-Wide	5.17	15.5	16	*13.5
Counties where prices are below statewide:				
Columbiana	5 16.5	15	15.5	....
Defiance, Franklin, Knox and Pickaway:				
	5 16	14.5	15	....
Paulding	5 15.5	14	14.5	....

RENOWN GASOLINE (Third Grade)

Ohio State-Wide	5 16.5	15	15.5	....
Counties where prices are below statewide:				
Columbiana	5 16	14.5	15	....
Defiance, Franklin, Knox and Pickaway				
	5 15.5	14	14.5	....
Paulding	5 15	13.5	14	....
Counties where prices are above statewide: Butler, Clermont, Darke, Greene, Hamilton, Hocking, Miami, Montgomery, Preble, Summit, and Warren	5 17	15.5	16	....

KEROSINE PRICES

(Off Statewide Level)

Kerosine prices are off statewide level in the following counties:

Gallia and Washington *13

S. O. Ohio Cont.

Allen, Auglaize, Champaign, Columbiana, Darke, Geauga, Greene, Hancock, Hardin, Logan, Mahoning, Mercer, Preble, Putnam, Shelby, Trumbull, Union, Van Wert and Wyandot: *12.5

Paulding *12

Ashtabula *11.5

Fayette, Licking, Madison, Pickaway, Portage and Summit ..... * 9.5

*Kerosine prices include 1c state tax.

**Tank wagon price to commercial consumers, in t.w. deliveries of 25 gals. or more: less than 25-gal deliveries get s.s. price. Price to undivided dealers is same as to commercial consumers.

†This price also to authorized agents, exclusive of 0.5c rental.

Sales tax: Ohio's 3% sales tax, effective Jan. 27, 1935, is added "where assessable, to regular posted prices", S. O. Ohio says.

On kerosine, prices to resellers and commercial consumers are posted generally at 3c per gal. below consumer t.w. price in any quantity, when such prices are on state-wide level.

S. O. Kentucky

CROWN GASOLINE

(Regular Grade)

	Consumer T.W.	All Tax	Total Consumer T.W.	Net Dlr.	Kerosine T.W.
Covington, Ky.	13.5	6	19.5	16.5	11
Lexington, Ky.	14	6	20	17	11
Louisville, Ky.	14	6	20	17	10.5
Paducah, Ky.	14	6	20	17	8
Jackson, Miss.	14	7	21	18	*13
Vicksburg, Miss.	13.5	7	20.5	17.5	*13
Birmingham, Ala.	13	*8	21	18	12
Mobile, Ala.	13	*9	22	19	11
Montgomery, Ala.	13	*9	22	19	*14.5
Atlanta, Ga.	14	7	21	18	*13
Augusta, Ga.	14	7	21	18	*14
Macon, Ga.	14.5	7	21.5	18.5	*14.5
Savannah, Ga.	12	7	19	16	*12
Jacksonville, Fla.	12.5	8	20.5	17.5	11
Miami, Fla.	12.5	8	20.5	17.5	11.5
Pensacola, Fla.	13	*9	22	19	12
Tampa, Fla.	12.5	*9	21.5	18.5	11

KYSO GASOLINE

(Third Grade)

Covington, Ky.	12	6	18	15.5	....
Lexington, Ky.	12.5	6	18.5	16	....
Louisville, Ky.	12.5	6	18.5	16	....
Paducah, Ky.	12	6	18	15.5	....
Jackson, Miss.	12.5	7	19.5	17	....
Vicksburg, Miss.	12	7	19	16.5	....
Birmingham, Ala.	11	*8	19	16.5	....
Mobile, Ala.	10.5	*9	19.5	17	....
Montgomery, Ala.	10.5	*9	19.5	17	....
Atlanta, Ga.	11	7	18	15.5	....
Augusta, Ga.	12	7	19	16.5	....
Macon, Ga.	10.5	7	17.5	15	....
Savannah, Ga.	10.5	7	17.5	15	....
Pensacola, Fla.	11	*9	20	17.5	....

Discounts to tank wagon consumers: Effective Jan. 4, 1937, thru territory, on Crown gasoline, 3c per gal. below consumer t.w. price; on Kyso, 2.5c below.

Discounts on kerosine: Prices in Kentucky are net, but in other states subject to 2c discount.

**Taxes*: in the tax column is included these city and county gasoline taxes at the following points: Mobile, 2c city; Birmingham, 1c city; Montgomery, 1c city and 1c county; Pensacola and Tampa, both 1c city. Georgia and Mississippi kerosine prices include 1c state tax. Montgomery kerosine prices includes 1c city tax.

S. O. Indiana

	Red Crown Total Tax	Dealer Prices Red Crown T.W.	Stanolind T.W.	Kerosine T.W.
Chicago, Ill.	4	15.5	13.5	12	10.1
Decatur, Ill.	4	15.5	14	13.5	10.1
Joliet, Ill.	4	15.5	14	13.5	10.1
Peoria, Ill.	4	15.5	14	13.5	10.1
Quincy, Ill.	4	15.3	13.8	13.3	9.9
Indianapolis, Ind.	5	17.2	15.7	15.2	*13.6
Evansville, Ind.	5	17	15.5	15	*14.6
South Bend, Ind.	5	17.4	15.9	15.4	*13.6
Detroit, Mich.	4	15.4	13.9	13.4	9.8
Grand Rapids, Mich.	4	16.5	15	14.5	10.9
Saginaw, Mich.	4	16.3	14.8	14.3	8.5
Green Bay, Wis.	5	17.2	15.7	15.2	8.4
Milwaukee, Wis.	5	16.8	15.3	14.2	10.6

Above prices include these inspection fees on both gasoline and kerosine, per gallon, figured on basis of 50 gallons per barrel:

Alabama, 1/40c on gasoline, 1/2c on kerosine; Arkansas, 1/5c per gal. in a single barrel, 1/20c per gal. in bulk; Florida, 1/8c; Illinois, 3/100c; Indiana, 1/2c per gal. in a single barrel; 3/10c per gal. in lots of 2 to 10 bbls., 1/5c for 10 to 50 bbls., 2/25c for over 50 bbls.; Kansas, 1/50c, (3/50c can be charged to meet inspection department expenses); Louisiana, 1/32c; Minnesota, 1/25c; Missouri, 3/100c; Nebraska, 3/100c; Nevada, gasoline, 1/20c; North Carolina, 1/4c; North Dakota, 1/20c; Oklahoma, 2/25c per gal., in lots of more than 50 bbls., 1/5c in lots less than 50 bbls.; South Carolina, 1/8c; South Dakota, 1/10c; Tennessee, 2/5c; and Wisconsin, 1/25c.

Kerosine inspection fee only: Iowa, 2/25c; Michigan, 4/5c per gal. for first 2 bbls.; 3/5c for next 3; 2/5c for next 5; 3/10c for next 15, and 1/5c per gal. in lots over 25 bbls.

TANK WAGON, SERVICE STATION MARKETS

Tax column includes 1c federal tax, state gasoline tax, also city and county taxes as indicated in footnotes, and inspection fees, as shown in general footnote. These prices in effect June 28, 1937, as posted by principal marketing companies at their headquarters offices, but subject to later corrections

S. O. Indiana Cont.

	Red Crown Tax	Dealer Prices Red Crown Total T.W.	Stanolind T.W.	Kerosine T.W.
La Crosse, Wis	5	16.9	15.4	14.9	10.5
Minneapolis-St. Paul	5	16.9	15.4	14.9	10.5
Duluth, Minn	5	17.3	15.8	15.3	10.9
Mankato, Minn	5	16.9	15.4	14.9	10.5
Des Moines, Ia	4	15.3	13.8	13	*12.9
Sioux City, Ia	4	15.5	14	13.5	*13.1
Davenport, Ia	4	15.5	14	13.5	*13.1
Mason City, Ia	4	15.7	14.2	13.7	*13.3
St. Louis, Mo	*4	15.2	13.7	12.2	9.8
Kansas City, Mo	*4	14.9	13.4	12.9	8.9
St. Joseph, Mo	*4	14.9	11.4	11.4	6.9
Fargo, N. D.	4	16.9	15.4	14.9	11.5
Minot, N. D.	4	18.1	16.6	16.1	12.7
Huron, S. D.	*5	17.3	15.8	15.3	*10.9
Wichita, Kans	4	14.4	12.9	12.4	9

*Taxes: in the tax column is included these city and state gasoline taxes at following points: Kansas City, St. Joseph and St. Louis, 1c city tax; South Dakota, 0.1c sales tax. State Kerosine taxes: Indiana, 4c; Iowa, 3c, all included in above prices.

Discount to commercial consumers: Effective Jan. 1, 1935, thru territory, except Michigan effective Feb. 1, on purchases per month, discount off t.w. prices; all gasolines, 25 to 1,000 gals., at t.w. price; 1,000 gals., or more, 1.5c off t.w. on Ethyl and Red Crown, and 1c on Stanolind (latter effective June 9, 1937). Minimum delivery is 25 gals.

S. O. Nebraska

STANDARD RED CROWN GASOLINE

	All Tax	T.W. Total	Dealer Total	Kerosine T.W.
Omaha, Neb	6	17.9	16.4	10.4
McCook	6	18	17.1	10
Norfolk	6	18.3	16.8	10.8
North Platte	6	18.7	17.2	11.2
Scottsbluff	6	19.4	17.9	10.9

Discounts to commercial consumers: for tank wagon deliveries covered only by Standard Commercial Consumer Contract, effective January 1, 1935.

S. O. Louisiana

ESSOLENE

	Consumer Tank Car	Dealer T.W.	Taxes	Posted S.S.	Kerosine T.W.
Little Rock, Ark	8	10.5	7.5	**	11.5
Alexandria, La	8	10.5	8	**	*12
Baton Rouge, La	7.5	10	8	21.5	*12
New Orleans, La	7.5	10	*10	23.5	*14
Lake Charles, La	8.5	11	8	**	*12.5
Shreveport, La	7	9.5	8	**	*9.5
Lafayette, La	8.5	11	8	**	*12.5
Bristol, Tenn	10.5	11.75	8	**	14.5
Chattanooga, Tenn	10	12.5	8	**	13.5
Knoxville, Tenn	10.5	13	8	**	14
Memphis, Tenn	8.5	11	8	**	12
Nashville, Tenn	9.5	12	8	**	11

*New Orleans gasoline tax includes 7c state, 1c federal, and 2c parish tax. Louisiana kerosine prices include 1c state tax; in addition New Orleans has 1c parish tax.

**S. O. Louisiana transferred stations to dealers; no prices available.

Price basis to dealers: Undivided dealers get dealer price, less 0.5c

Price basis to commercial consumers: Effective May 15, 1937, thru territory; commercial consumers taking 50 gals. or more at one time will be billed at posted consumer t.w. price; those taking less than 50 gals. at one time will be billed at 4c per gal. over posted consumer t.w. price. Generally, the posted consumer t.w. price will be equivalent to the dealer price less 0.5c per gal.

Humble Oil & Refining Co.

HUMBLE MOTOR FUEL

	*100% Dlr. T.W.	Total *100% Dlr. Taxes	T.W.	S.S.	Kerosine T.W.
Dallas, Tex	8.5	5	13.5	17	8
Ft. Worth, Tex	8.5	5	13.5	17	8
Houston, Tex	9.5	5	14.5	18.5	8
San Antonio, Tex	9.5	5	14.5	18.5	8
(Third Grade)					
Dallas, Tex	7	5	12	14	
Ft. Worth, Tex	7	5	12	14	
Houston, Tex	8.5	5	13.5	16.5	
San Antonio, Tex	8.5	5	13.5	16.5	

*Price is t.w. price to contract dealers and commercial consumers. Price to open dealers is 0.5c above t.w. prices shown above.

Price basis to dealers: to contract dealers consumer accounts off posted retail price; when posted retail price, including all taxes on Esso motor fuel is: 19.1c per gal. and above discount is 4c; 19c to 18.1c, 3.5c, and 18c and below, 3c. Humble motor fuel, 17.1c and above, 4c; 17 to 16.1c, 3.5c; and 16c and below, 3c; U. S. motor fuel, 15.1c and above, 3c; 15 to 14.1c, 2.5c; and 14c and below, 2c. To "open" dealer accounts, discounts in each case are 0.5c less on the same price basis.

Continental Oil

	Conoco Bronze Ex-Tax	Dealer Prices All Tax	Total Conoco Bronze T.W.	Demand T.W.	Kerosine T.W.
Denver, Colo	12.5	5	17.5	16.5	11.5
Grand Junc., Colo	15	5	20	19	15
Pueblo, Colo	11	5	16	15	10.5
Casper, Wyo	13	5	18	17	11.5
Cheyenne, Wyo	13	5	18	17	13
Billings, Mont	15.5	6	21.5	20.5	15.5
Butte, Mont	13.5	6	19.5	16.5	15.5
Great Falls, Mont	15.5	6	21.5	20.5	15.5
Helena, Mont	15.5	6	21.5	20.5	15.5
Salt Lake City, Utah	14.5	5	19.5	16.5	16
Boise, Ida	15.5	6	21.5	20.5	18
Twin Falls, Ida	15.5	6	21.5	20.5	18
Albuquerque, N. M.	11	†6.5	17.5	16.5	12
Roswell, N. M.	12	†6.5	18.5	15	10.5
Santa Fe, N. M.	13	*7	20	16.5	12
Muskogee, Okla	10	5	15	13	7
Oklahoma City, Okla	10	5	15	12	8
Tulsa, Okla	9	5	14	13	7
Ft. Smith, Ark	8	5	13	12	10
Little Rock, Ark	10	7.5	17.5	15.5	9.5
Texarkana, Ark	10	5	15	13	9

†Includes city tax of 0.5c.
*Includes 1c city tax.

S. O. California

STANDARD GASOLINE

	T.W.	Taxes	Total T.W.	S.S.	Kerosine T.W.
San Francisco, Cal	13.5	4	17.5	18.5	11.5
Los Angeles, Cal	13	4	17	18	9
Fresno, Cal	14.5	4	18.5	19.5	12
Phoenix, Ariz	15	6	21	22	†16
Reno, Nev	15	5	20	21	13
Portland, Ore	14	6	20	21	13.5
Seattle, Wash	14	6	20	21	13.5
Spokane, Wash	17	6	23	24	16.5
Tacoma, Wash	14	6	20	21	13.5

FLIGHT GASOLINE
(Third Grade)

San Francisco, Cal	12	4	16	17	....
Los Angeles, Cal	11.5	4	15.5	16.5	....
Fresno, Cal	13	4	17	18	....
Reno, Nev	13.5	5	18.5	19.5	....
Phoenix, Ariz	13.5	6	19.5	20.5	....
Portland, Ore	12.5	6	18.5	19.5	....
Seattle, Wash	12.5	6	18.5	19.5	....
Spokane, Wash	15.5	6	21.5	22.5	....
Tacoma, Wash	12.5	6	18.5	19.5	....

†Includes 5c state tax.

Discount to dealers: on gasoline, off t.w. price on Standard Ethyl and Standard Gasoline, to 100% dealers, 3c; to split dealers, 2c; on Flight gasoline, both 100% and split dealers, 2c.

On Stanavo Aviation Gasoline, to all classes of dealers, 3c off t.w.

To commercial consumers: off tank wagon price: on single deliveries of 40 gallons and over, Stanavo Aviation, Standard Ethyl and Standard Gasolines, 3c. Flight Gasoline, 2c per gallon. Tank wagon delivery, less than 40 gals., 1c per gal. above posted t.w. price.

On kerosine in tank car, transport truck and trailer delivery, 3c off t.w. price; plant deliveries to jobbers, 2.5c below t.w.

Canada

PRICES OF IMPERIAL OIL LTD.

Per Imperial Gallon, which is 1.2 U. S. Gallons

3-STAR IMPERIAL GASOLINE

	T.W.	Taxes	Total T.W.	Kerosine T.W.
Hamilton, Ont	16	6	22	17
Toronto, Ont	16	6	22	17
Brandon, Man	22.8	7	29.8	22.3
Winnipeg, Man	21.2	7	28.2	20.7
Regina, Sask	22.5	7	29.5	22
Saskatoon, Sask	25.3	7	32.3	24.8
Edmonton, Alta	23.5	7	30.5	24.2
Calgary, Alta	21	7	28	21.5
Vancouver, B. C.	16	7	23	23
Montreal, Que	14	6	20	17.5
St. John, N. B.	16	8	24	18.5
Halifax, N. S.	16	8	24	18.5

Note: Imperial Oil Ltd. has completed transfer of service stations to dealers: no s.s. prices available.

Discounts to undivided dealers, 1c off t.w. price, except Maritime Provinces where undivided dealers pay t.w. price. Divided dealers pay t.w. price, thru territory.

Aviation Gasoline

Following are tank car and/or tank wagon prices of aviation gasoline in principal marketing territories (Stanavo aviation in all territories except Continental Oil.) Tax column includes 1c federal tax, and state tax; also municipal taxes as indicated in footnotes.

S. O. NEW JERSEY

	Tank Car	T.W.
Bayonne, N. J.	9.5	12
Baltimore, Md	10	12
Washington, D. C.		12.6
Richmond, Va		14.7
Greensboro, N. C.		15.2
Raleigh, N. C.		16.6
Charleston, W. Va		14.7

COLONIAL BEACON OIL CO.

	T.W.
Brooklyn, N. Y.	12.8
Buffalo, N. Y.	14.1
Boston, Mass	15

S. O. PENNSYLVANIA

Philadelphia, Pa	12.3
Pittsburgh, Pa	12.6

S. O. LOUISIANA

New Orleans, La	13.3
Shreveport, La	13.6

Prices in above four territories do not include state or federal taxes. They are for 74 octane grade aviation gasoline. An 80 octane product generally brings 0.5c premium and an 87 octane product, 1.5c premium over the 74 octane grade.

Note: S.s. prices in above four territories are generally 6c over t.w. prices. Above t.w. prices are net, with no discounts allowed for quantity purchases. T.w. prices are generally tank car price, plus freight, plus 2.5c per gal.

S. O. OHIO
Thru Ohio

	Tax	Total Consumer T.W.
Stanavo Ethy Aviation:		
73 octane	5	20.5
80 octane	5	21.5
87 octane	5	22.5

Discounts: For delivery on contract to hangar operators and resellers: 2c below commercial consumer posted t.w. price, shown above.

S. O. INDIANA

Chicago, Ill	4	19
Detroit, Mich	4	20.2
Milwaukee, Wisc	5	20.3
Minneapolis, Minn	5	20.4
St. Louis, Mo	*3	17.7
Kansas City, Mo	*4	18.4
Fargo, N. D.	4	20.4
Huron, S. D.	5	20.8

*Includes 1c city tax.
**Includes 0.1c to cover.

HUMBLE OIL & REFINING CO.

	Tank Car
Baytown, Tex. (exclusive of taxes)	8.5

CONTINENTAL OIL CO.

	Dealer	Tax	Total Dealer
Denver, Colo	15.5	5	20.5
Cheyenne, Wyo	16	5	21
Helena, Mont	18.5	6	24.5
Salt Lake City, Utah	17.5	5	22.5
Albuquerque, N. M.	14	*6.5	20.5

*Includes city tax of 0.5c.

S. O. CALIFORNIA

Phoenix, Ariz	17	6	23
Los Angeles, Cal	15	4	19
San Francisco, Cal	15.5	4	19.5
Reno, Nev	17	5	22
Portland, Ore	16	6	22
Seattle, Wash	16	6	22
Spokane, Wash	19	6	25

Note: For discounts, etc., see note under Standard and Flight gasoline above.

TANK WAGON, SERVICE STATION MARKETS

Tax column includes 1c federal tax, state gasoline tax, also city and county taxes as indicated in footnotes, and inspection fees, as shown in general footnote. These prices in effect June 28, 1937, as posted by principal marketing companies at their headquarters offices, but subject to later corrections

Naphtha (In Tank Wagon)

S. O. NEW JERSEY

Posted Tank Wagon Prices	Mineral Spirits	V.M.&P.
Newark, N. J.	13.5	15.5
Baltimore, Md.	15.5	....
Washington, D. C.	15	....

Discounts: Buyers taking following quantities, at one time, get these discounts: Newark, 2c per gal. on 200 gals. or more; less than 200 gals., 0.5c higher price. Baltimore 2c off on 25 to 100 gals. and 3c on over 100 gals. Washington, 2c off to contract buyers.

SOCONY-VACUUM OIL CO.

Buffalo, N. Y.	13	14
New York City	11	12
Rochester, N. Y.	12	15
Syracuse, N. Y.	14	15
Boston, Mass.	13.5	14
Bridgeport, Conn.	13.5	14
Hartford, Conn.	13	13.5
Providence, R. I.	13.5	14.5

ATLANTIC REFINING CO.

Philadelphia, Pa.	11.5	12.5
Lancaster, Pa.	13	14
Pittsburgh, Pa.	12.5	14.5

Note: Prices for Mineral Spirits also apply to Stoddard Solvent; and prices for V.M.&P. Naphtha apply also to Light Cleaners Naphtha.

S. O. OHIO

	S.R. Solvent	V.M.&P. Naphtha
Thru Ohio	13.25	13.75

Note: V.M.&P. Naphtha prices also apply on Dry Cleaners naphtha and special Varnolene; Varnolene and Sohio Solvent 0.5c below these prices. Discounts to contract consumers, off t.w. price: 300 to 999 gals., 0.5c; 1,000 to 2,499 gals., 0.75c; 2,500 to 4,999 gals., 1c; 5,000 or more gals., 1.5c.

S. O. INDIANA

(Prices include state and federal taxes)

	Oleum Spirits	V.M.&P. Naphtha	Stanisol
Chicago, Ill.	15.8	16.1	15.5
Detroit, Mich.	19.2	18.2	19.3
Kansas City, Mo.	14.4	15.4	14.4
St. Louis, Mo.	14.7	15.7	14.6
Milwaukee, Wis.	19.3	20.3	19.3
Minneapolis, Minn.	19.4	20.4	18

Note: Prices for V. M. & P. apply also to Light Cleaners Naphtha. All prices, with exception of Missouri points, include state tax. Prices shown are base prices, before discounts.

Naphtha (In Tank Cars)

In Tank Cars (F. o. b. refinery or seaboard terminal except Ohio, delivered price.)

	V.M.&P. Naphtha	Solvent
Baltimore	10.50	10
New York Harbor	11	10
Philadelphia district	11	10
Boston	10.5	10
Providence	10.5	10
Ohio points, delivered	9.75	*9.25

*This is on S.R. solvent.

Note: In Ohio, prices on D.C. naphtha and special Varnolene are same as V.M.&P.; on Varnolene and Sohio Solvent, prices are 0.5c less than on V.M.&P.

Latest Changes

From June 22 to June 28 inclusive. Dates and amounts of changes shown. See table for full current prices. Changes are on gasoline unless kerosine is indicated.

S. O. Ohio—Kerosine:
Ashtabula, cut 1c, June 24.

Continental Oil—Demand:
Muskogee, dealer price cut 1c, June 22.

Naphtha

Socony-Vacuum—Mineral Spirits and V. M. & P.:
New York City, t. w. cut 0.5c, June 23.

Corrections

Notation of amount of change and dates not previously shown in table. Table in this issue is corrected to show these changes. Changes are on gasoline unless kerosine is indicated.

Socony-Vacuum—Kerosine:
Buffalo, Rochester and Syracuse cut 0.5c, June 7.
Jamestown, cut 1.25c, June 7.

S. O. Indiana—Stanolind:
Wichita, dealer price up 0.1c, June 18.
Kerosine:
Wichita, up 0.1c, June 18.

TRANSACTIONS IN OIL STOCKS ON NEW YORK STOCK EXCHANGE

1936 High	1936 Low	1937 High	1937 Low	Listed Shares	Par Value	Company	Current Dividend	Last Div. Paid	Transactions Week Ended June 26, 1937 Sales Shares	High	Low	Last	Week's Change
125½	75	114⅞	87	788,675	N.P.	Amerada Corp.	50cQ	Apr. 30, 37	500	87	85½	85½	— 2½
35⅛	26⅝	37	27⅜	2,664,901	$25	Atlantic Refining Co.	25c	Mar. 15, 37	3,700	28¼	27¾	28	— ⅛
118½	109	116½	107	148,000	$100	do pfd. A	$1.00	Feb. 1, 37	....	....	....	....	....
28⅜	13¼	43⅜	28⅝	390,223	$10	Barber Co., Inc.	50c	Dec. 20, 36	2,100	30⅛	†28⅝	29	— ¼
28¼	14⅛	35¼	24¼	2,247,974	5	Barnsdall Corp.	25c	Feb. 1, 37	5,700	25	24¼	24¾	— ⅜
30	8¼	42	26	1,444,970	N.P.	Colonial Beacon Oil Co.	....	....	....	....	....	....	....
17¼	11½	17⅞	14½	13,983,287	N.P.	Consolidated Oil Corp.	20c	Feb. 15, 36	25,900	15⅝	15	15⅛	— ½
106½	101	105⅞	104¾	132,771	N.P.	do pfd.	$1.25	June 1, 37	1,100	105	104¾	104¾	— ¼
44⅞	28⅛	47⅜	39¾	4,682,662	$5	Continental Oil Co.	25c	June 30, 37	8,700	43⅞	42½	43½	+ ⅛
13⅞	6⅜	17⅝	12½	1,098,618	25	Houston Oil Co., v.t.c.	....	....	9,400	15⅛	14⅛	14⅝	+ ⅛
15⅛	4⅛	22¼	12¾	1,207,132	10	Indian Refining Co.	....	....	....	....	....	....	....
51½	13	35¾	28	40,000	100	Louisiana Oil Refining Corp. pfd.	....	....	....	....	....	....	....
6⅜	2¼	6¾	3¼	305,000	$1	Maracaibo Oil Exploration Co.	....	....	800	3½	3¼	3½	+ ⅛
30⅞	17¼	35⅜	25½	1,855,912	$10	Mid-Continent Pet. Corp.	50c	June 1, 37	2,900	27⅜	26½	27¼	+ ⅜
29⅞	16⅜	34	23⅞	1,399,345	N.P.	Mission Corp.	45c	Dec. 18, 36	500	25¾	25½	25¾	— ⅛
18	12⅛	22⅞	17⅛	6,563,377	N.P.	Ohio Oil Co.	50c	June 15, 37	11,800	18⅞	17⅞	18⅛	— ⅜
23½	11⅜	29⅜	20¾	1,000,000	N.P.	Pacific Western Oil Corp.	65c	Dec. 18, 36	200	21¾	21¼	21¾	— 1¼
20⅝	12¼	17⅛	11	4,699,885	$5	Pan Amer. Pet. & Transp. Co.	60c	Dec. 21, 36	....	....	....	....	....
4½	1⅜	4½	2½	199,370	N.P.	Panhandle Prod. & Ref'g. Co.	....	....	400	2½	2⅜	2⅜	— ⅛
74½	18½	121	60	17,994	$100	do pfd.	....	....	130	102½	99	99	— 1½
18¼	12⅜	21⅝	16¼	2,153,444	5	Petroleum Corp. of America	40c	May 29, 37	1,100	17½	17	17	— ⅜
52⅜	38⅛	59¼	49½	4,152,836	N.P.	Phillips Petroleum Co.	50c	Mar. 1, 37	12,500	54¾	53⅛	54	— ⅜
18¼	8	20¼	14¾	150,000	100	Pierce Oil Corp. 8% cum. pfd.	....	....	400	16	15¼	15¼	— ⅜
3⅝	1½	4⅛	3⅛	2,500,000	N.P.	Pierce Petroleum Corp.	....	....	....	....	....	....	....
27¾	11⅞	29⅞	24¼	1,050,000	$5	Plymouth Oil	35c	June 30, 37	2,800	26½	25⅜	26	— ¼
24⅛	16	24⅝	16⅝	3,038,370	N.P.	Pure Oil Co.	....	....	74,600	17¾	17	17⅝	0
118	91¼	107	99	167,640	$100	do 6% pfd	$1.50	July 1, 37	200	100¾	100	100	0
133¾	103	112¾	108	130,000	100	do 8% pfd	$2.00	July 1, 37	520	109¾	109	109	0
18¾	17	18⅞	16	927,305	10	Quaker State Oil & Refg.	25c	June 15, 37	900	17	16½	17	0
44	30½	54⅛	36⅝	1,244,383	N.P.	Seaboard Oil of Del.	25c	June 15, 37	2,000	40¾	39¼	39¼	— 1¼
28¼	14⅝	34⅝	25⅝	13,070,625	N.P.	Shell Union Oil Corp.	25c	Dec. 15, 36	7,900	28	26¼	27⅞	+ 1
127½	102	105⅜	102	400,000	$100	do pfd. w.w.	$1.37½	July 1, 37	800	104⅝	104⅝	104⅝	— ⅛
6¾	3½	4¼	3½	461,000	10	Simms Petroleum Co.	**$1.00	Jan 9, 37	700	3⅝	3½	3⅝	0
47⅜	19½	60⅝	42	1,008,549	15	Skelly Oil Co.	50c	July 1, 37	1,800	56⅜	54⅜	56⅜	+ 1⅞
132	97⅝	102¼	98½	120,000	100	do pfd.	$1.50	May 1, 37	100	99	99	99	0
17½	12½	20¼	16¼	31,151,075	15	Socony Vacuum Oil Co.	25c	Mar. 15, 37	66,400	19⅞	19	19½	0
47⅝	35	50	39⅝	13,014,754	N.P.	S. O. California	25c	Mar. 15, 37	9,400	41½	40¼	40¼	— 1¼
48½	32¾	50	40½	15,215,677	$25	S. O. Indiana	25c	June 15, 37	10,400	43	42¼	42⅞	+ ⅜
31	25	32	30⅝	145,441	10	S. O. Kansas	$1.00	Dec. 26, 36	....	....	....	....	....
70⅜	51½	76	63⅛	26,200,825	25	S. O. New Jersey	50c	June 15, 37	12,900	66¾	65	65½	— ¼
91	70	77½	65	2,019,093	N.P.	Sun Oil Co.	25c	June 15, 37	400	67	66¼	67	+ 2
125	118	125	118½	100,000	$100	do pfd.	$1.50Q	June 1, 37	330	121	120	121	0
6¾	3	7¾	4⅛	966,979	$1	Superior Oil Corp. (Del.)	....	....	4,900	4⅝	4⅜	4½	— ⅛
55¼	28⅞	65¼	50⅜	9,851,236	$25	The Texas Corp.	50c	July 1, 37	21,800	59	56¾	58½	+ ¾
15¼	7½	16⅝	11⅜	930,570	10	Texas Pacific Coal & Oil Co.	10c	Mar. 1, 37	1,900	14⅜	13¾	14	— ⅜
21¾	19	21⅝	15⅜	5,873,000	$10	Tide Water Associated Oil Co.	20c	June 1, 37	6,900	17¼	16⅛	16¾	+ ¼
106½	100⅝	98	91¾	695,503	$100	do pfd. C. T. V.	$1.12½Q	July 1, 37	400	96	94	95	0
28½	20¾	28¼	23	4,386,070	$25	Union Oil of California	25cQ	Feb. 10, 37	4,000	23⅝	23¼	23½	+ ¼
31⅜	22⅝	31½	24¾	1,200,000	N.P.	Union Tank Car Co.	40cQ	Mar. 1, 37	700	27	26⅜	26½	— ¼
2⅞	½	1¾	⅝	759,538	N.P.	Warner Quinlan Co.	....	....	900	⅞	¾	¾	0
5¼	2¾	6¼	4¼	431,443	$5	H. F. Wilcox Oil & Gas Co.	....	....	600	4⅞	4¾	4⅞	— 1/16

*New high. †New low. Ex-div. **Dividends of liquidation.
E also 6% stock dividend.

SEABOARD MARKETS, EXPORT AND COASTWISE

All prices on this page are publisher's opinion of open market quotations or sales, for spot shipment (10 to 15 days). In cargo markets, spot shipment is 90 days. Prices in cents per gallon, except heavy fuel oil in dollars per barrel, in tank car lots, f.o.b. refineries or seaboard terminals in districts designated, unless otherwise noted. Federal, state or municipal taxes not included. Prices quoted apply on products made from legally produced crude.

Prices effective June 28, 1937

Eastern Domestic

(Inter-refinery and export prices not included.)

MOTOR GASOLINE

	*60-64 Octane	‡65 Octane and Above
New York harbor	7.25 – 7.50	7.50 – 7.75
New York harb., barges	7.00 – 7.25	7.25 – 7.50
Philadelphia district	7.25	7.50
Baltimore district	7.25	7.50
Norfolk district	7.00	7.50
Wilmington, N. C. dist.	7.25	7.50
Charleston, S. C. dist.	7.25	7.50
Savannah district	7.25	7.50
Jacksonville district	7.25	7.50
Portland district	7.75	8.00
Boston district	7.25	7.50 – 7.75
Providence district	7.25	7.50

*Prices are nominal.

WATER WHITE KEROSINE

New York harbor	6.30
New York harbor, barges	6.00 – 6.125
Philadelphia district	6.25
Baltimore district	6.25
Norfolk district	6.25
Wilmington, N. C.	6.25
Charleston, S. C. district	6.25
Savannah district	6.25
Jacksonville district	6.25
Portland district	6.75
Boston district	6.40
Providence district	6.30

†FUEL OILS

	New York harbor	New York harbor, barges
No. 1	6.30	5.875– 6.125
Nos 2-3	5.25 – 5.30	5.125
No. 4	5.25 – 5.30	5.125
No. 5	$1.55 –$1.60	.....
No. 6	$1.35	.....

	Philadelphia district	Baltimore district
No. 1	6.25	6.25
Nos. 2-3	5.00 – 5.25	5.25
No. 4	4.75 – 5.00	5.25
No. 5	$1.47 –$1.55	$1.55
No. 6	$1.30 –$1.35	$1.35

	Boston district	Providence district
No. 1	6.40	6.30
Nos. 2-3	5.40	5.30
No. 4	5.25 – 5.40	4.875– 5.125
No. 5	$1.55 - $1.60	.....
No. 6	$1.35	.....

†Fuel oils meet specifications of U. S. Commercial Standards CS12-35.

	Bunker C Fuel (Ships' Bunkers)	Diesel Oil Ships' Bunkers
New York harbor	*$1.35	**$2.20
Philadelphia district	*$1.30 –$1.35	*$2.20
Baltimore district	*$1.35	**$2.20
Norfolk district	*$1.35	$2.20
Charleston district	$1.30	$2.20
Savannah district	*$1.30	$2.20
Jacksonville district	*$1.30	$2.20
Tampa district	*$1.30	$2.20
Portland district	$1.45	$2.35
Boston district	*$1.35	**$2.25
Providence district	$1.35	$2.25

	Gas Oil 28-34 Gravity per gallon	Diesel Oil Shore Plants Per gallon
New York harbor	5.25	5.25
Philadelphia district	5.00	....
Baltimore district	5.25	....
Norfolk district	5.25	....
Savannah district	....	5.25
Jacksonville district	....	5.25

*For barging add 5c per bbl.
**For barging add 6.5c per bbl.

Pacific Export

(Quotations are at seaboard, Los Angeles, in cargo lots, cents per gallon, except where otherwise noted.)

U. S. Motor gasoline, under 65 octane	5.50 – 5.75
400 e.p. blend 65 Octane and above	5.75 – 6.25
38-40 w.w. kerosine, 150 fire point	4.50 – 4.75
41-43 w.w. kerosine	4.75 – 5.00
44 w.w. kerosine	5.00

In Cargo lots, per barrel

Diesel fuel oil, 24° and above	$1.15 –$1.26
Diesel fuel oil, under 24°	$1.06 –$1.15
*30-34 diesel oil (gas oil)	$1.25 –$1.35
†Grade C fuel oil	$0.85 –$1.05

In Ships' Bunkers, or deep tank lots, per barrel:

*Diesel fuel oil	$1.625–$1.65
†Grade C fuel oil	$1.075–$1.10

*Pacific specification 200. †Pacific specification 400. See story June 23 issue, page 19.

Cased Goods: (Per case)

Gasoline, U. S. Motor	$1.40 –$1.525
Gasoline, 400 e.p. blend, 65 octane and above	$1.50 –$1.625
40-43 w.w. kerosine, 150 fire point	$1.25 –$1.325
Kerosine, prime white	$1.20 –$1.30

Note: San Francisco cargo prices, add 5c per bbl.

New York Export

(Prices in cents per gallon in barrels, F.a.s. New York)

CYLINDER OILS (Pennsylvania Products)

Bright stock:	
Light, 25 pour test	31.50
Dark, 25 pour test	31.00
Neutral oil:	
200 3 color, 25 pour test	34.00
150 3 color, 25 pour test	29.50
600 Warren E filtered	26.50
600 stm. rfd., unfiltered	23.50
650 stm. rfd., unfiltered	25.50
600 flash, steam refined	26.50
630 flash, steam refined	30.50

Wax, Domestic *and* Export

(Prices in cents per pound. Tests made by A. S. T. M. methods. Melting points shown below, however, are A. M. P., 3° higher than A. S. T. M. (E. M. P.) melting points. Export prices are f.a.s. carload lots. Domestic prices are f.o.b. refineries in New York and New Orleans districts, in bags, carload lots, with 0.2c discount allowed for shipment in bulk. Scale solid and fully refined slabs in bags.)

	New York Domestic	New York Export
124-6 Y.C. scale	2.85 – 2.90	2.85 – 2.90
122-4 W.C. scale	2.95 – 3.00	2.95 – 3.00
124-6 W.C. scale	2.95 – 3.00	2.95 – 3.00
123-5 Fully refined	4.45	4.375
125-7 Fully refined	4.55	4.50
128-30 Fully refined	4.80	4.75
130-2 Fully refined	5.05	5.00
133-5 Fully refined	†5.50	5.50
135-7 Fully refined	†5.75	5.75

†Shipment either in bags or in bulk.

	New Orleans Domestic	New Orleans Export
124-6 Y.C. scale	2.85 – 2.90	2.85 – 2.90
122-4 W.C. scale	2.95 – 3.00	2.95 – 3.00
124-6 W.C. scale	2.95 – 3.00	2.95 – 3.00
123-5 Fully refined	4.45	4.375
125-7 Fully refined	4.55	4.50
128-30 Fully refined	4.80	4.75
130-2 Fully refined	5.05	5.00
133-5 Fully refined	†5.50	5.50

†Shipment either in bags or in bulk.

Gulf Coast

(Prices are f.o.b. ship at Gulf oil terminals representing opinions of traders, except prices specified to the contrary. Prices cover bulk shipments of 20,000 barrels or more, unless otherwise noted.)

For Domestic Shipment:

MOTOR GASOLINE

59 octane and below	*6.00 – 6.125
60-64 octane number	*6.25
65 octane and above	6.50 – 6.625

FUEL OILS

No. 1 Fuel oil	4.875– 5.00
No. 2 Fuel oil	4.125– 4.25
No. 4 Fuel oil	3.875– 4.00

KEROSINE

41-43 w.w.	4.875– 5.00

For Export Shipment:

GASOLINE

U. S. Motor gasoline	5.875– 6.00
60-62, 400 e.p. gasoline	6.00 – 6.125
61-63, 390 e.p. gasoline	6.125– 6.25
64-66, 375 e.p. gasoline	6.25 – 6.375

* Nominal

KEROSINE

44 water white	5.00 – 5.125
41-43 water white	4.875– 5.00
41-43 prime white	4.875

GAS AND BUNKER OILS

For Domestic and/or Export Shipment

‡26-30 translucent gas oil	4.00
‡30 plus translucent gas oil	4.125– 4.25
‡30 plus transparent gas oil	4.125– 4.25
Diesel Oil Ship's bunkers	†$1.90
Grade C bunker oil, for ship's bunkers	†$1.05
Grade C bunker oil, in cargoes	$0.95

‡Less than ½ of 1% sulphur. †Barging 5c bbl. additional at some Gulf ports.

MEXICAN CRUDE AND BUNKER OILS

(F.o.b. Steamer, Tampico)

Heavy Panuco crude, taxes to be paid	*$1.35
Grade C bunker oil, ship's bunkers, taxes paid	$1.05

MID-CONTINENT LUBRICATING OILS

(Prices in cents per gallon in bbls. f.a.s. Gulf oil terminals. In drums and new barrels, 0.5c to 1c higher per gal. in some instances.)

190-200 vis. D 210 bright stock	28.50
150-160 vis. D 210 bright stock:	
0-10 pour point	25.50
10-25 pour point	25.00
25-40 pour point	24.50
150-160 vis. E 210 brt. stock	24.50
120 vis. D 210 bright stock	23.50
180 vis. No. 3 color neutral Oil:	
0-10 pour point	16.50
15-30 pour point	16.00
200 vis. No. 3 color neutral Oil:	
0-10 pour point	17.00
15-30 pour point	16.50
600 s.r. olive green	12.50
600 s.r. dark green	11.00
631 s.r.	23.00

SOUTH TEXAS LUBRICATING OILS

(Viscosity at 100° F., pour point 0. Tanker, f.o.b. Gulf oil terminals, for export shipment)

Unfiltered Pale Oils:

Vis.	Color	
100	No. 3	5.50 – 5.75
200	No. 3	7.25 – 7.50
300	No. 3	7.75 – 8.00
500	No. 3½	8.50 – 8.75
750	No. 4	9.25 – 9.50
1200	No. 4	9.75 –10.00
2000	No. 4	10.25 –10.50

Red Oils:

Vis.	Color	
100	No. 5-6	5.50 – 5.75
200	No. 5-6	7.25 – 7.50
300	No. 5-6	7.75 – 8.00
500	No. 5-6	8.50 – 8.75
750	No. 5-6	9.25 – 9.50
1200	No. 5-6	9.75 –10.00
2000	No. 5-6	10.25 –10.50

Note: Red oil prices shown above cover oils with green cast; prices for blue cast red oils are slightly lower in some cases.

Tanker Rates

(Approximate tanker freight rates to Continental ports, in shillings per ton of 2240 pounds, British sterling; to U. S. ports in cents per barrel)

	Crude &/or Fuel		Refined Oil &/or Spirits	
	Last Paid	Owners Ask	Last Paid	Owners Ask
Gulf-U.K./Cont.‡	28/6	29/3-30/6	31/6	32/-33/
Aruba-U.K./Cont.‡	25/6	24/6-26/6	27/6	28/-31/
Gulf-N. Atlantic** (not E. of N. Y.):				
Hvy. Crude & Fuel, (10 to 19.9 gravity)	58c-59c	*58c-59c	....	....
Light Crude, (30 gravity or lighter)	54c	*54c-55c	....	....
Gasoline	....	....	60c	*60c
Kerosine	....	....	61c	*61c
Light Fuel	....	....	62c	*62c

Note: Dirty boat quotations are enlarged to cover, "Fuel and Light Crude" quotations.

*Nominal.

‡Continental ports in range between Bordeaux and Hamburg, both inclusive.

**Venezuela loading same rate; Tampico 2c to 3c per bbl. additional.

STANDARD OIL STOCKS ON NEW YORK CURB MARKET

1936 High	1936 Low	1937 High	1937 Low	Listed Shares	Par Value	Company	Current Dividend	Last Div. Paid	Transactions Week Ended June 26, 1937 Sales Shares	High	Low	Last	Week's Change
18	12¼	19	13⅛	36,000	$25	Borne Scrymser Co.	75c	Apr. 15, 37	100	13⅛	†13⅛	13⅛	— ⅜
50	39¾	51½	45¾	200,000	50	Buckeye Pipe Line Co.	$1.00	June 15, 37	150	46½	†45¾	45¾	— 3¼
124¾	105	122¼	110¼	120,000	25	Chesebrough Mfg. Co.	$1.00Q	June 28, 37	....	....	....	....	....
39	19⅞	38	28½	6,974,356	$5	Creole Petroleum Co.	25c	June 10, 37	17,800	37¾	35¼	36½	+ 1
47½	38½	47½	34	50,000	$50	Eureka Pipe Line Co.	$1Q	Feb. 1, 37	....	....	....	....	....
80	57	87	73½	8,985,662	N.P.	Humble Oil & Refg. Co.	37½c	July 1, 37	1,500	75⅞	†73½	75¼	+ ¼
24⅛	19¾	24¼	20	26,965,078	N.P.	Imperial Oil Ltd.	°25cS	June 1, 37	5,000	20⅝	†20	20¼	— ⅜
24⅜	19⅞	24	20⅜	.....	N.P.	do registered	25cS	Dec. 1, 36	.....	....	....	....	....
9¾	5½	14⅞	7¾	300,000	$10	Indiana Pipe Line Co.	20c	Dec. 17, 36	....	....	....	....	....
39⅝	32⅝	39½	33½	14,324,088	N.P.	International Pet. Co.	°75cS	June 1, 37	2,200	34⅝	34¼	34½	— ⅛
38½	33⅜	38	34	.....	....	do registered	....	.....	100	34	†34	34	— ¾
15¾	9¼	12½	10	509,000	$12.50	National Transit Co.	45c	June 15, 37	400	10⅜	10¼	10¼	0
6¼	4¼	5⅜	4½	100,000	5	New York Transit Co.	15c S.A.	Oct. 15, 36	100	4½	4½	4½	0
9¾	4⅞	12¾	7½	120,000	10	Northern Pipe Line Co.	40c	June 1, 37	300	10½	10½	10½	+ ⅜
110⅜	104½	111½	106¾	562,122	100	Ohio Oil Co. pfd.	$1.50Q	June 15, 37	100	109½	109½	109½	— ⅛
8¼	5½	8¾	5½	394,000	$1	Penn Mex Fuel Co.	50c	Dec. 21, 36	....	....	....	....	....
44	32½	48	42	1,142,671	10	South Penn Oil Co.	37½cQ	June 30, 37	300	43¼	43	43	— ½
7⅞	3¼	7¼	5	100,000	25	Southern Pipe Line Co.	20c	Mar. 1, 37	600	6½	5⅝	6½	+ 1⅜
60	44	42	27	35,000	10	South West Pa. Pipe Lines	50c	July 1, 37	....	....	....	....	....
23⅜	17⅛	20¾	19	2,604,801	50	S. O. Kentucky	25c	June 15, 37	2,400	19½	19⅛	19⅛	— ⅜
14⅝	11	13¾	10	182,803	25	S. O. Nebraska	25c	Mar. 29, 37	300	10⅛	9⅞	10⅛	+ ⅛
40	21¾	45	33	753,740	25	S. O. Ohio	25c	Mar. 15, 37	100	34⅜	33⅜	34	0
107½	97	105¾	102½	120,000	100	do 5% pfd.	$1.50Q	Apr. 15, 37	100	103½	102½	102½	— ½
13⅜	5⅛	17	11	34,158	15	Swan Finch Oil Corp.	25c	June 25, 37	100	14	14	14	— 1

*New high. †New low. °Imperial Oil Spec. 37½c June 1, 37. International Pet. Extra 50c June 1, 36.
x Ex dividend.

Oil and Royalty Stocks on New York Curb

1936 High	1936 Low	1937 High	1937 Low	Par Value	Company	Transactions Week Ended June 26, 1937 Sales Shares	High	Low	Last	Week's Change
1⅞	1/16	2⅜	1¼	N.P.	American Maracaibo	13,900	1⅞	1¾	1¾	0
8¼	3¼	12⅞	6¼	N.P.	Arkansas Nat. Gas	1,500	7	6⅝	6¾	— ⅛
8¼	3¼	13¼	6¼	N.P.	do A	9,600	7⅛	6⅝	7	0
10⅞	7⅛	10¾	8¼	$10	do pfd.	600	8½	8½	8½	0
7¼	6¼	8¼	5½	$1	Ashland Oil & Refg.	600	5¾	5⅝	5⅝	— ⅛
27¼	16½	26¼	22⅝	N.P.	British Amer. Oil coup.	....	....	....	....	....
4⅞	1⅞	2¾	1⅝	$¼	Carib Syndicate	2,400	1¾	1⅝	1⅝	0
7⅜	3	5⅜	2⅝	N.P.	Cities Service	16,300	2⅞	2¾	2¾	— ⅛
66	41½	60	39	N.P.	do pfd.	500	41¼	†39	39	— 2½
6½	3¾	5⅞	3½	N.P.	do pfd. B	400	3½	†3½	3½	— ⅞
63	40	58	38	N.P.	do pfd. BB	1,000	38	†38	38	— 2
4	5/8	....	....	N.P.	Colon Oil Corp.	....	....	....	....	....
10½	¾	10⅞	5¾	$1	Columbia Oil & Gas	4,000	7	6¼	6½	+ ⅜
3⅛	2	3⅛	2⅛	$10	Consolidated Royalty	600	2⅝	2⅝	2⅝	0
4½	1½	4⅝	1¼	$1	Cosden Oil	2,900	1¾	1⅝	1¾	+ ⅛
38¼	6½	39⅞	23	$100	do pfd.	....	....	....	....	....
2¾	1¾	2⅝	1⅞	N.P.	Crown Central Pet.	3,800	1⅞	1¾	1⅞	0
2⅜	¾	2⅝	⅞	N.P.	Crystal Oil Refg.	1,400	1⅝	1	1½	+ ⅝
....	....	12	4	....	do pfd.	900	*12	8½	11½	+ 4
18½	9	18½	11¾	$5	Darby Petroleum	800	12⅜	12⅛	12⅛	— ⅜
6¾	1⅞	8¼	5¼	N.P.	Derby Oil & Refg.	600	6⅝	6½	6½	0
81	25½	88	75	N.P.	do pfd.	25	75	†75	75	— 1
59	54	63¼	50	$25	Gulf Oil Corp.	4,300	52¾	50½	52	— 1¼
6¼	2⅝	4⅞	2	N.P.	Indian Ter. Illg. Oil A	....	....	....	....	....
6½	3	4⅞	1⅝	N.P.	do B	1,500	2	†1⅜	2	+ ⅛
5¾	2⅝	8¾	5¼	$1	Kirby Petroleum	2,300	5¾	5½	5¾	0
2	½	2½	1	$25	Leonard Oil	4,600	1⅛	1	1	— ⅛
17¾	7⅜	32½	16½	N.P.	Lion Oil Refg.	17,700	32⅛	30¼	31⅛	— ⅞
14¼	9⅞	14¼	9⅞	N.P.	Lone Star Gas	800	10⅝	10¼	10⅝	+ ⅜
22¼	12	33½	25	N.P.	Margay Oil Co.	200	30	30	30	0
4⅛	1½	4¼	2	N.P.	Mexico-Ohio Oil	300	2¼	2¼	2¼	— ⅛
4¾	1⅞	11⅛	2¾	$1	Michigan Gas & Oil	600	9¼	8⅜	9¼	+ 1
6⅝	2¾	7	4⅛	N.P.	Mid. States Pet. A vtc.	100	4½	4½	4½	0
2⅝	1/16	2	⅞	N.P.	do B vtc.	1,000	1	⅞	1	0
8⅜	5	7⅞	5¾	$10	Mountain Producers	400	6	6	6	+ ⅛
23	17⅜	19½	14½	N.P.	National Fuel Gas	1,200	15⅝	15	15⅛	+ ⅛
4⅝	2⅞	6⅛	4¾	$5	New Bradford Oil	700	6⅛	5¾	6⅛	+ ¾
8⅜	3⅜	6⅛	5	$5	North Central Texas	....	....	....	....	....
1/16	1/16	¾	1/16	$1	North European	2,200	1/16	1/16	1/16	1/16
17⅜	12	14½	12⅝	$5	Oil Stocks Ltd. A	....	....	....	....	....
10⅛	3¼	9⅝	5½	$1	Pantepec of Venezuela	64,800	8⅞	7½	7¾	+ ⅝
1/16	1/16	1/16	1/16	25c	Producers Corp.	1,600	⅜	1/16	1/16	+ 1/16
20	3	17⅛	10	N.P.	Red Bank Oil	800	13½	13	13½	0
1½	1/16	1¾	3/16	N.P.	Reiter-Foster Oil	1,500	1	⅞	⅞	— ⅛
2¾	1/16	....	....	$25	Richfield Oil pfd.	....	....	....	....	....
19¼	4½	13¾	5	$1	Root Petroleum	2,100	6⅞	6¼	6¼	— ¾
23	14½	18	11½	$20	do conv. pr. pfd.	500	13	13	13	0
4¾	1⅞	6½	4	N.P.	Ryan Consolidated	300	5½	5½	5½	— ⅛
11¼	6¼	11¼	8⅝	N.P.	Southland Royalty	600	10¼	10	10¼	+ ⅛
5	2⅝	4⅞	3¾	$1	Sunray Oil	3,200	4	3⅞	4	0
49	45	50	40¾	....	do pfd.	....	....	....	....	....
9¾	5⅜	7⅝	5¼	N.P.	Texon Oil & Land	300	5½	5½	5½	0
8	2⅜	9¼	6	....	Venezuela Mex.	700	6½	6	6½	+ ⅜
3	1¼	3¾	1¾	$1	Venezuela Petroleum	1,600	2	1¾	1⅞	+ ⅛
11	5⅝	12⅞	8⅜	$1	Woodley Petroleum	500	8¾	8¼	8¾	+ ⅛

*New high. †New low.

Oil Dividends

Dividends Waiting Payment

Company	Amount	Record	Payable
Amerada Corp. q	50c	July 15	July 31
Atlantic Oil Investment	20c	June 19	June 10
Barnsdall Oil Co. q	25c	July 10	Aug. 2
Consolidated Oil Corp. E	10c	July 15	Aug. 14
Consolidated Oil Corp. q	20c	July 15	Aug. 14
Consolidated Royalty Oil q	05c	July 15	July 25
Darby Petr. S.	25c	July 2	July 15
Lion Oil Refg. E	25c	June 30	July 20
Lion Oil Refg. q	25c	June 30	July 20
Lone Star Gas	20c	July 21	Aug. 21
Lone Star Gas 6½% pfd. q	$1.63	July 14	July 31
Shell Union Oil I	50c	July 6	July 15

E extra; I interim; R resumed; S semi-annual; Sp special; Ac On accumulations.

New York Bonds

Week Ended June 26

	High	Low	Last	Change
Atlantic Refg. deb. 5s	99⅞	99⅞	99⅞	— ⅛
Houston Oil 5½s '40	102	101¾	102	— ¼
Pure Oil 4¼s '50 w.w.	112½	110⅝	112¼	— ¼
Pure Oil 4¼s"50 x.w.	110	108⅛	109½	— ½
Shell Union Oil 3½s '51	98¾	96¾	97¼	—1
Skelly Oil 4s '51	99⅞	99¼	99¼	— ⅝
Socony-Vacuum 3½s '50	105⅝	104⅞	105	— ⅜
S. O. N. J. 3s '61	98	97¼	97¼	— ¾
Union Oil of Calif. 6s A	118	117	118	+ ½
do 3½s '52	109¾	109	109¾	+1¾
Warner-Quinlan 6s '39	48½	47	47½	—1¼

Pittsburgh Stock Exc.

Transactions Week Ended June 25, 1937

	Sales	High	Low	Last	Change Over Week
Ark. Nat. Gas	20	6⅜	6⅜	6⅜	— ⅝
Col. Gas & Elec.	420	11⅜	11⅛	11⅜	0
Devonian Oil	515	24	22¾	22¾	—1¼
Lone Star Gas	1,230	10½	10⅜	10½	+ ¼
Mountain Fuel Supply	895	8	7¾	8	+ ⅛
Phoenix Oil	4,000	.06	.06	.06	0
do pfd	500	.10	.10	.10	0
Shamrock Oil & Gas	1,011	7⅜	6½	6½	— ⅞
†Stand. Oil of N. J.	154	66⅞	65⅜	66¼	+2

†Unlisted.

New York Curb Bonds

Week Ending June 26

	High	Low	Last	Change
Cities Serv. 5s '66	70½	70¼	70¼	+1⅜
Cities Serv. 5s '50	68⅞	68	68	— ⅛
Cities Serv. G. 5½s '42	100	99⅞	100	— ⅛
Empire O & R 5½s '42	86⅜	85¼	85⅜	— ½

Cleveland Stock Exc.

Transactions Week Ended June 26, 1937

	Sales	High	Low	Last	Change Over Week
Canfield Oil	....	....	....	....	....
do pfd	....	....	....	....	....
Nat'l Refining	175	7⅞	7⅜	7⅞	+ ⅜
do pfd	....	....	....	....	....

CLASSIFIED

Positions Wanted

ENGINEER with fifteen years experience in design, operation, maintenance of refineries desires connection as sales engineer with company manufacturing refinery equipment. Thoroughly experienced all modern refining operations. Pleasing personality and free to travel. Can furnish very satisfactory references as to work, ability and character. Address Box 437.

EXPERIENCED GREASE, SOAP MAKER. Understands manufacture automotive, industrial lubricants. Original maker hypoid gear compound, specialties. Bar soap, chips, roof paints. Michael Pokgrant, 57 Crosman Ave., Buffalo, N. Y.

CONSTRUCTION ENGINEER employed by major company will consider a position with reputable corporation requiring a man of broad experience and ability. Address Box 438.

POSITION WANTED BY YOUNG EXECUTIVE experienced in natural gasoline, refining and specialty products development work. Accustomed to and willing to accept responsibility. Now employed but desirous of change for personal reasons. Please communicate under confidential cover with "Executive," care National Petroleum News, World Building, Tulsa, Okla.

Situations Open

SALESMAN WANTED

Major oil company has opening for salesman who is experienced in obtaining and holding retail dealer outlets and in supervising bulk and service station units. Should be familiar with marketing policies of Indiana and Illinois.

Address Box 439.

THOROUGHLY EXPERIENCED REFINERY DRAFTSMAN. Send complete analysis training and experience, and photo, to Box 441, care National Petroleum News, Cleveland, Ohio.

For Sale

FLOATING STORAGE

Concrete scow, 8 compartments totaling 250,000 gallon capacity, 112 ft. x 34 ft. Original cost $25,000. Price $2,500. Located Eastern seaboard.

Address Box 440.

Business Opportunities

EUROPEAN OIL COMPANY

With complete sales organization throughout Europe, desires affiliation with U. S. refiner who will take financial interest or offer agency agreement.

WM. WISHAR
Broker of Oil Marketing Properties
2331 Grandview, Cleveland Heights, Ohio

Professional Services

ANTI-KNOCK VALUES DETERMINATIONS
The Gray Industrial Laboratories
Chemists and Engineers
Specialists on Petroleum Products
961-976 Frelinghuysen Ave.,
NEWARK, N. J.
Telephone Bigelow 3-4020

PHOENIX CHEMICAL LABORATORY
An Exclusive Petroleum Testing Laboratory
Equipped For All Known Tests and Research in Petroleum Products
3953 Castello Ave., Chicago
Telephone—Spalding 3578

Coming Meetings

General Expositions

The Greater Texas and Pan American Exposition, Dallas, June 12 to Oct. 31.
The Great Lakes Exposition, Lake Front, Cleveland, Ohio, May 29 to Sept. 6.

Oil Meetings—Expositions

Interstate Oil Compact Commission meeting, Santa Fe, New Mexico, July 12 and 13.
West Virginia Motor Truck Assn., Huntington, W. Va., July 29, 30 and 31.
Third Michigan Oil and Gas Exposition, Exposition Park, Mt. Pleasant, Mich., Aug. 10 to 15.
American Chemical Society, Rochester, N. Y., Sept. 6 to 10.
Kentucky Petroleum Marketers Association, Annual Fall Conference and Golf Tournament, Louisville, Sept. 7 and 8.
Third Annual Bituminous Conference, Glacier National Park, Mont., Sept. 7, 8 and 9.
North American Gasoline Tax Conference, San Francisco, Calif., Sept. 13 to 16.
National Petroleum Association, annual meeting, Hotel Traymore, Atlantic City, N. J., Sept. 15, 16 and 17.
Society of Automotive Engineers, regional tractor meeting, Mayflower Hotel, Akron, Ohio, Sept. 15, 16 and 17.
Pacific Oil Show and Black Gold Festival, Taft, Calif., Sept. 16 to 19.
Oil Trades Assn. of New York, Sports Outing, Pelham Country Club, Pelham Manor, N. Y.
National Association of Petroleum Retailers, fifth national convention, Rochester, N. Y., Sept. 27 to Oct. 1.
American Gas Association, 19th annual convention, Cleveland, Ohio, Sept. 27 to Oct. 1.
Ohio Petroleum Marketers Association, fall conference, Hotel Carter, and golf tournament, Westwood Country Club, Cleveland, Sept. 29 and 30.
Society of Automotive Engineers, regional transportation meeting, Chicago, Ill., Sept. 29, 30 and Oct. 1.
Society of Automotive Engineers, Fuel and Lubricants Regional meeting, Tulsa, Okla., Sept. 30 and Oct. 1.
Society of Automotive Engineers, National Aircraft Production meeting, Ambassador Hotel, Los Angeles, Calif., Oct. 7, 8 and 9.
26th National Safety Congress and Exposition, Kansas City, Mo., Oct. 11 to 15.
National Oil Marketers Assn. Convention and Trade Exhibit, Stevens Hotel, Chicago, Ill., Oct. 12, 13 and 14.
Indiana Independent Petroleum Assn., annual convention, Hotel Severin, Indianapolis, Oct. 13 and 14.
Oil-World Exposition, Inc., Houston, Texas, Oct. 11 to 16.
25th Annual Conference on Taxation, auspices New England State Tax Officials Association, Hanover, N. H., Oct. 14 and 15.
Independent Petroleum Association of America, Houston, Texas, Oct. 14, 15 and 16.
American Association of Petroleum Geologists, mid-year meeting, William Penn Hotel, Pittsburgh, Pa., Oct. 14, 15 and 16.
Michigan Petroleum Association, Traverse City, Mich., Oct. 21 and 22.
National Tax Association, 30th annual conference, The Lord Baltimore Hotel, Baltimore, Md., Oct. 25 to 28.
Society of Automotive Engineers, annual dinner, Commodore Hotel, New York City, Oct. 28.
Mid-Continent Oil & Gas Association of Texas, annual meeting and convention, Dallas, Texas, Oct. 29 and 30.
National Automobile Show, Grand Central Palace, New York City, Oct. 27 to Nov. 3.
American Petroleum Institute, 18th annual meeting, Stevens Hotel, Chicago, Ill., Nov. 9 to 12.
Oil Trades Association of New York, New York, Nov. 16.
National Asphalt Conference, Memphis, Tenn., week of Dec. 6.
Exposition of Chemical Industries, Grand Central Palace, New York, N. Y., Dec. 6 to 11.
Society of Automotive Engineers, National Productioin meeting, Flint, Mich., Dec. 8, 9 and 10.
Nebraska Petroleum Marketers, Inc., Omaha, Nebr., Dec. 14, 15 and 16.
American Chemical Society, Division Organic Chemistry, Richmond, Va., Dec. 28, 29 and 30.

Fuel Oil Standard Delayed

WASHINGTON — Recommended revision of commercial standard CS12-35 for fuel oils has been delayed by belated discovery of a group of important refineries that their No. 2 oils, which are giving satisfactory service, are outside the carbon residue limit.

A sub-committee of the A.S.T.M. technical committee C of Committee D-2 has been appointed to investigate the matter and to report at the June meeting of the American Society for Testing Materials.

Following decision by the Standing Committee further action will be taken toward completing acceptance of the revision and making it effective.

Vladimir A. Kalichevsky has been appointed general supervisor of the Research and Development Division of Socony-Vacuum Oil Co., Paulsboro, N. J.

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